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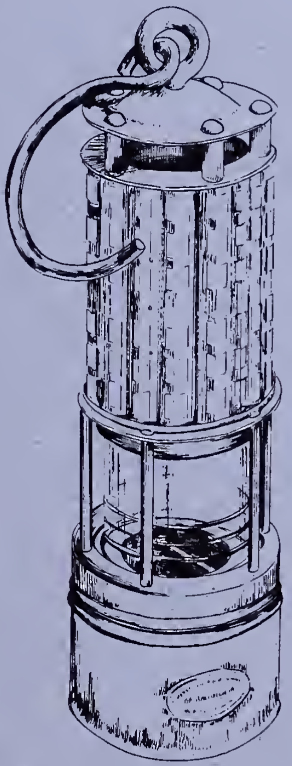
Montana. Dept. of
State Lands
Meridian
Minerals Company's
proposed
development of the
Bull Mountains

Final Environmental Impact Statement

MERIDIAN MINERALS COMPANY

BULL MOUNTAINS MINE NO. 1

MUSSELSHELL AND YELLOWSTONE COUNTIES, MONTANA



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November 1992

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DEPARTMENT OF STATE LANDS

STAN STEPHENS, GOVERNOR
CAPITOL STATION

STATE OF MONTANA

(406) 444-2074
1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

November 28, 1992

TO ALL INTERESTED PARTIES:

The enclosed environmental impact statement (EIS) has been prepared by the Montana Department of State Lands (DSL) and is available for public review. The EIS analyzes the impacts on the quality of the human environment that would result should DSL grant a permit to mine coal and Meridian Minerals Company (Meridian) subsequently develop the proposed Bull Mountains Mine No. 1 underground coal mine.

A draft EIS was released by DSL for public review and comment on August 31, 1992. Eighty-four comment letters were received during the 35 day comment period which ended October 5, 1992. In addition, local residents and interested parties were afforded the opportunity to comment during three public hearings on September 22, 1992, in Huntley, Montana, September 23, 1992, in Billings, Montana and September 24, 1992, in Roundup, Montana.

While not containing any major changes from the draft EIS, the final EIS contains corrections and clarifications of the original text. The letters and oral comments of the public as well as the responses from DSL have been included in an appendix, Appendix F. Alternative 1, approval of the applicant's proposal with conditions, has been selected as DSL's preferred alternative.

After publication of this EIS, DSL must make a decision whether to approve or disapprove Meridian's application for a permit to mine coal. DSL can make this decision no sooner than 15 days after release of the final EIS to the public.

Further information, including additional copies of the final EIS, may be obtained by contacting DSL at the address above.

Sincerely,

Bonnie Lovelace

Bonnie Lovelace, Chief
Coal and Uranium Bureau
Reclamation Division

"AN EQUAL OPPORTUNITY EMPLOYER"

Final

Environmental Impact Statement

MERIDIAN MINERALS COMPANY'S

Proposed Development
of the

BULL MOUNTAINS MINE NO. 1

and

ASSOCIATED SUPPORT FACILITIES

MUSSELSHELL AND YELLOWSTONE COUNTIES, MONTANA

November 28, 1992

Dennis D. Casey, Commissioner
Department of State Lands

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COVER SHEET

Proposed actions: Approval or disapproval of 1) a Montana 5-year *permit to mine coal,* and 2) a Montana *land use agreement* being requested by Meridian Minerals Company for the construction and operation of the Bull Mountains Mine No. 1 and its associated support facilities.

Type of statement: Final environmental impact statement (EIS)

Lead agency:
State of Montana,
Department of State Lands (Montana DSL)

For further information:
Bonnie Lovelace, Chief, Coal and Uranium Bureau
Attn: Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, Montana 59620
(406) 444-2074

Abstract:

Meridian Minerals Company proposes to construct and operate the Bull Mountains Mine No. 1, an underground coal mine located in Musselshell and Yellowstone counties, about 35 miles northeast of Billings and 16 miles southeast of Roundup, Montana. Support facilities for the proposed mine would be located throughout Musselshell and Yellowstone counties.

The proposed Project has five elements: 1) the mine and its facilities; 2) a temporary upgrade of the existing Montana Rail Link rail loadout near Huntley; 3) a proposed 33-mile rail spur from the Burlington Northern mainline south of Broadview; 4) a 17-mile upgrade and extension of the Fergus Electric Cooperative power transmission line from the city of Roundup; and 5) limited wetland enhancement activities outside the life-of-mine area.

The Bull Mountains Mine No. 1 and its support facilities (the Project), would occupy about 12,115 acres, and could eventually disturb about 8,250 of those acres. The proposed mine would be in operation for about 44 years and would eventually recover 100 million tons of clean coal using both longwall and room-and-pillar mining methods. During full production, about 300 people would be employed by Meridian.

The specific action requested is to approve a 5-year permit. MSUMRA requires Montana DSL to analyze the life-of-mine proposal, however, permits are granted for 5-year periods. Meridian's current permit application is only for the area proposed to be reviewed in the first 5 years of the mine life. The 5-year permit would encompass about 4,217 acres, of which about 4,023 are privately owned, 40 are owned by the State of Montana, and about 154 are federally owned. Of the mineral ownership in the 5-year permit area, about 3,096 acres are privately owned, 40 acres are owned by the State of Montana, and about 980 acres are federally owned.

PREFACE

An EIS is not usually read like a book, from the first page to the end. The best way to go about reading an EIS depends on your interests. You may be more interested in impacts, while others might have more interest in the details of the proposed plan or opportunities made available for public involvement in the environmental assessment process. Many readers probably just want to know what is being proposed and how it will affect them.

The following paragraphs outline information contained in the chapters and appendices so that readers may find the parts of interest without having to read the entire document.

The **Summary** is a short, simple discussion to provide the reader and the decision makers with a sketch of the more important aspects of the EIS. The reader can obtain additional, more detailed information from the actual text of the EIS.

Chapter I is the first section of the EIS. It introduces the reader to the Project, the agencies involved, the major issues associated with the Project, and the underlying purpose of, and need for the EIS.

Chapter II identifies the pertinent components of the primary alternatives analyzed in Chapter IV and presents conditions for additional mitigation. All other alternatives, considered but not analyzed, are identified along with the rationale for not including them in the analysis. This chapter also provides a comparative analysis of the environmental impacts of the primary alternatives to provide a clear basis of choice among options for the decision maker and the public.

Chapter III describes the current condition of resources that are expected to be affected by the alternatives under analysis in Chapter IV.

Chapter IV is the most important section of the EIS. Here is the discussion of expected impacts to the human environment, both with and without the Project.

Chapter V lists the agencies consulted during the preparation of the EIS and describes opportunities made available for public participation. It also discusses issues brought up by the public and considered but not analyzed in Chapter IV, along with the reason for not including them in the Chapter IV analysis.

Chapter VI lists interdisciplinary team members responsible for preparation of the EIS.

Chapter VII lists references cited in the EIS.

Chapter VIII is a glossary of technical or unusual terms or acronyms used in the EIS.

Appendix A provides a complete, concise description of the Project as proposed by the applicant including proposed mitigations.

Appendix B is a description of the various projects, in progress or expected to occur in the reasonably foreseeable future, that were considered in the cumulative analysis.

Appendix C explains the different aspects of room-and-pillar and longwall mining.

Appendix D discusses the role various State and Federal agencies have in evaluating the merits of, and in approving or regulating the proposed Project. It also lists agencies having jurisdiction over the Project along with the statutes that give them authority.

Appendix E is a compilation of technical material used in the development of the EIS.

Appendix F is a compilation of comments on the draft EIS and responses to those comments.

SUMMARY

This environmental impact statement (EIS) identifies and analyzes probable impacts to the human environment that would result should Montana Department of State Lands (Montana DSL) grant a permit for, and Meridian Minerals Company (Meridian) subsequently develop, the proposed Bull Mountains Mine No. 1 and associated facilities (the Project). This EIS also analyses the probable cumulative impacts that would result from the proposed Project in combination with other projects and activities proposed for the area in the reasonably foreseeable future. The other projects and activities included in the cumulative analysis were: the PM Mine, Meridian's coal test pit, the Huntley loadout facility, the Huntley sugar beet loading site, Fergus Electric Cooperative activities, the proposed women's correctional facility, the Cenex hydrosulphurization project, Billings Generation, Inc.'s cogeneration project, U.S. Highway 87 improvements, Sealey's sawmill, Gebhart's post plant and sawmill, and activities of the Burlington Northern Railroad.

Before Montana DSL could issue a permit to mine coal, Meridian's permit application package (PAP) would have to meet all applicable State and Federal laws and regulations.

Brief description of the proposal

Meridian proposes to develop the Bull Mountains Mine No. 1 as an underground coal mine using primarily longwall mining methods with some room-and-pillar mining. The proposed Project is in the Bull Mountains about 16 miles south of Roundup, Montana and about 35 miles northeast of Billings, Montana. The proposal is to develop the mine to an eventual peak production of 3.3 million tons of clean coal per year. For the first 2 years, Meridian proposes to produce from about 0.5 million to 1.1 million tons of clean coal per year which would be transported by truck to a temporary rail loading facility at Huntley, Montana. Truck hauling would cease when Meridian finished a 33-mile rail spur from south of Broadview, Montana to the mine site.

The proposed Project would occupy a total area of about 12,115 acres, have a life of about 44 years, and would disturb about 8,250 acres. Livestock grazing and wildlife habitat are the primary current uses of the proposed Project area.

The Montana Strip and Underground Mine and Reclamation Act (MSUMRA) requires Montana DSL to analyze the life-of-mine proposal, however permits are granted for 5-year periods. Meridian's current permit application is only for the area proposed to be reviewed in the first 5 years of mine life. The 5-year permit would encompass about 4,217 acres, of which about 4,023 are privately owned, 40 are owned by the State of Montana, and about 154 are federally owned. Of the mineral ownership in the 5-year permit area, about 3,096 acres are privately owned, 40 acres are owned by the State of Montana, and about 980 acres are federally owned.

Purpose and need for a State action

Meridian has submitted a PAP to Montana DSL. Under the provisions of MSUMRA, Montana DSL has to approve or deny Meridian a permit to mine coal. This EIS analyzes the probable environmental consequences of development that would result from Montana DSL's action.

Actions available to Montana DSL would be to approve the proposed mining plan with any conditions needed to bring the proposed Project into compliance with all applicable laws and regulations (Alternative 1, approval of the proposed mining plan, with conditions), or deny Meridian a permit to mine coal because the proposed Project could not comply with the applicable laws and regulations including MSUMRA (Alternative 2, the disapproval alternative).

Comparison of alternatives

This EIS addresses: (1) site-specific impacts to the human environment that could result from development of the proposed Project and (2) cumulative impacts to the human environment that could result from development of the proposed Project in conjunction with other projects or activities occurring or expected to occur in the area in the reasonably foreseeable future.

Under Alternative 1 (the preferred alternative), Montana DSL's analysis found that:

- There would be an irretrievable loss of topographical diversity in the waste disposal area.
- There would be an irretrievable loss of vegetative and soil productivity on the area of the rail spur that would not be recontoured and revegetated (non-State-owned parcels).
- There would be an irretrievable loss of vegetative productivity along the rail corridor, within the surface facility complex and Huntley loadout until reclamation was successful.
- There could be a major impact to public safety, traffic flow, and the integrity/stability of County roads along the haul routes for the period of time coal would be trucked to Huntley.
- There would be major and beneficial impacts to public sector fiscal conditions in Musselshell County over the short term and major and negative impacts over the long term. There would also be moderate and beneficial impacts to employment, personal income, and population in Musselshell County over the short term, and moderate and negative impacts over the long term.
- There would be a major impact to visual and aesthetic resources from operation of the temporary coal loadout in Huntley for the 2 years of operation. The waste disposal area (WDA) and cuts-and-fills and structures would constitute an irretrievable commitment of visual/aesthetic resources. The WDA would also constitute an irreversable commitment of visual/aesthetic resources.
- There would be an irretrievable loss of agricultural productivity and development potential along the rail spur.
- There could be permanent, irretrievable, and potentially significant impacts to cultural resources from mining-related disturbances.

Under Alternative 2, the Montana DSL's analysis found that:

- There would be negligible impacts to air quality, geology, topography, soils, hydrology, wildlife, cultural, recreation, and land use.
- There would be negligible to minor impacts to vegetation, transportation, and noise.
- There would be moderate to major impacts to socioeconomics and visual resource/aesthetics.
- There would be a loss of some beneficial impacts to socioeconomic and cultural resources.

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CHAPTER I

INTRODUCTION

A. PURPOSE AND NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT

Montana Department of State Lands (DSL) (the Agency) received a complete permit application package (PAP) from Meridian Minerals Company (Meridian) of Denver, Colorado. The PAP includes a proposed life-of-mine mining plan and information necessary to obtain a State permit to conduct coal mining and reclamation operations at Meridian's proposed Bull Mountains Mine No. 1 in Musselshell and Yellowstone counties, Montana (see Figure I-1).

Meridian has submitted the PAP pursuant to the Montana Strip and Underground Mine Reclamation Act (MSUMRA) of 1973 as amended. MSUMRA requires the responsible officials at Montana DSL to approve, conditionally approve, or disapprove the permit application submitted by Meridian, and, if appropriate, issue a 5-year permit for the Bull Mountains Mine No. 1.

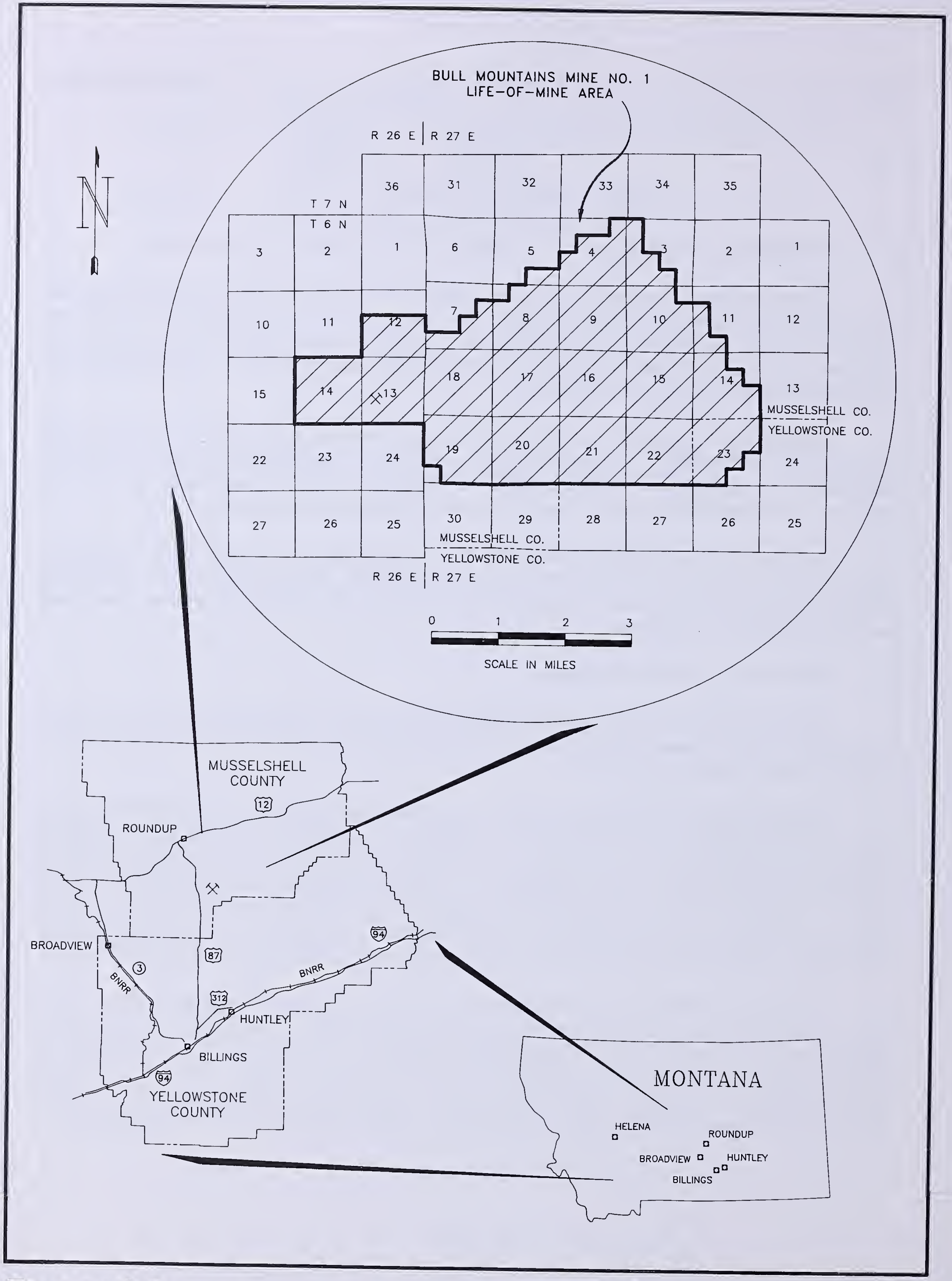
Montana DSL has determined that approval or disapproval of Meridian's permit application constitutes a major action that could significantly affect the quality of the human environment and, that pursuant to Section 75-1-201 of the Montana Environmental Policy Act (MEPA), an environmental impact statement (EIS) should be prepared.

B. THE APPLICANT'S PROPOSAL

Meridian proposes to develop the Bull Mountains Mine No. 1, an underground coal mine located in Musselshell and Yellowstone counties, about 35 miles northeast of Billings and 16 miles southeast of Roundup, Montana (see Figure I-2).

Support facilities for the proposed mine would be located throughout Musselshell and Yellowstone counties. The proposed Project has five elements: 1) the mine and its facilities; 2) a temporary upgrade of the existing Montana Rail Link rail loadout near Huntley; 3) a proposed 33-mile rail spur from the Burlington Northern mainline south of Broadview; 4) a 17-mile upgrade and extension of the Fergus Electric Cooperative power transmission line from the city of Roundup; and 5) limited wetland enhancement activities outside the mine area. The Bull Mountains Mine No. 1 and its support facilities (the Project), would occupy about 12,115 acres, and could eventually disturb about 8,250 of those acres.

The proposed mining operation would convert the existing PM Coal Mine and portions of the adjacent coal test pit site into a full-scale underground mining facility. The life-of-mine area for the proposed mine would contain a total of 10,859 acres of private, State, and Federal lands, 40 percent of which overlies State and Federal coal estate (see Figure I-3). About 871 acres of the life-of-mine area would be occupied by a surface facility complex to service the mining operation. Another 6,170 acres of the life-of-mine area could experience some surface subsidence caused by proposed underground


BULL MOUNTAINS MINE NO. 1
LIFE-OF-MINE AREA
R 26 E
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T 6 N
MUSSELSHELL CO.
YELLOWSTONE CO.
SCALE IN MILES
0
1
2
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MUSSELSHELL COUNTY
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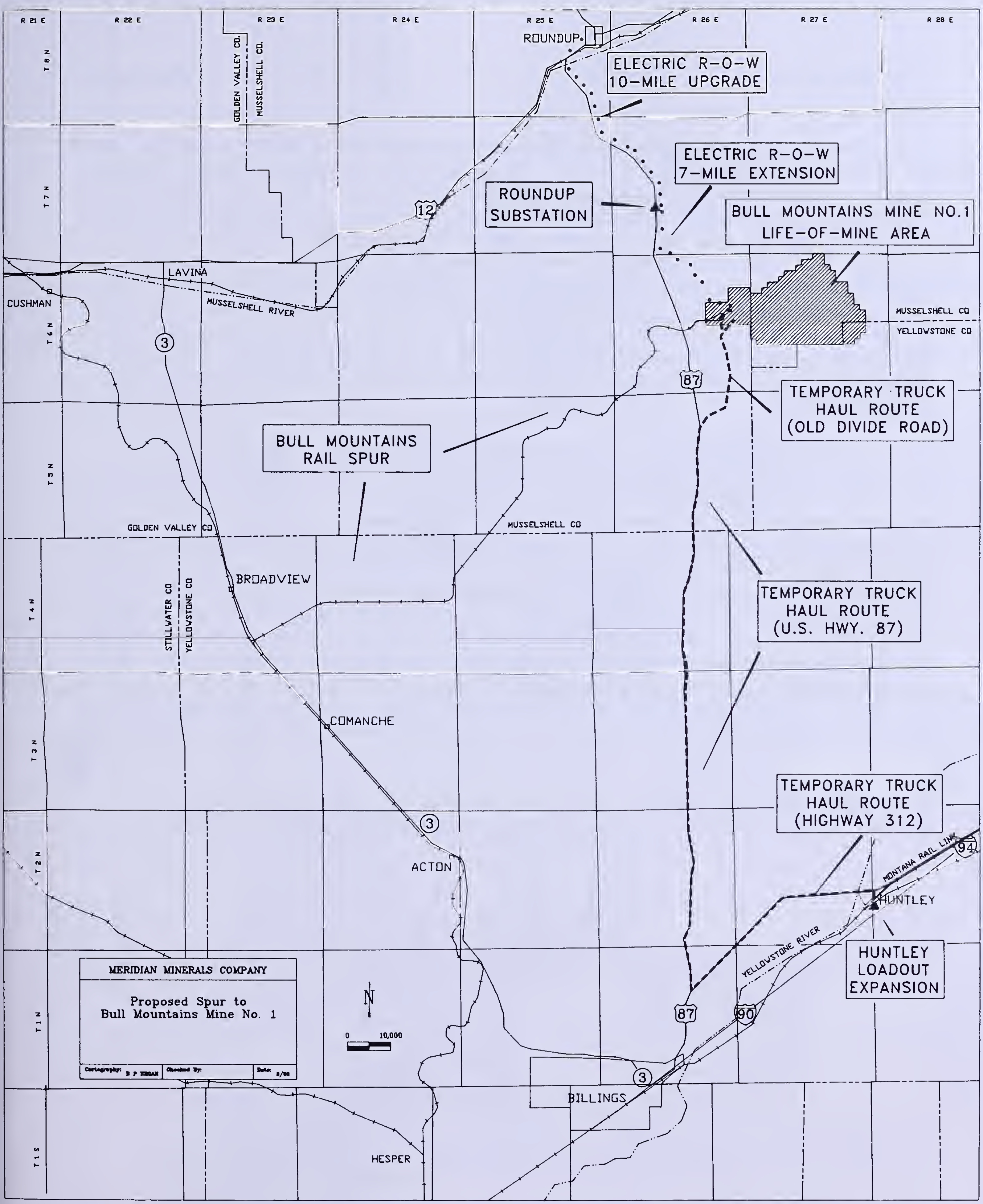
Figure I-1 General location of the proposed Bull Mountains Mine No. 1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R 28 E
T 8 N
T 7 N
T 6 N
T 5 N
T 4 N
T 3 N
T 2 N
T 1 N
T 1 S
ROUNDUP
ELECTRIC R-O-W
10-MILE UPGRADE
GOLDEN VALLEY CO.
MUSSELSHELL CO.
ELECTRIC R-O-W
7-MILE EXTENSION
ROUNDUP
SUBSTATION
BULL MOUNTAINS MINE NO.1
LIFE-OF-MINE AREA
12
LAVINA
CUSHMAN
MUSSELSHELL RIVER
MUSSELSHELL CO
YELLOWSTONE CO
3
87
TEMPORARY TRUCK
HAUL ROUTE
(OLD DIVIDE ROAD)
BULL MOUNTAINS
RAIL SPUR
GOLDEN VALLEY CO
MUSSELSHELL CO
BROADVIEW
STILLWATER CO
YELLOWSTONE CO
TEMPORARY TRUCK
HAUL ROUTE
(U.S. HWY. 87)
COMANCHE
TEMPORARY TRUCK
HAUL ROUTE
(HIGHWAY 312)
3
ACTON
MONTANA RAIL LINK
94
HUNTLEY
YELLOWSTONE RIVER
HUNTLEY
LOADOUT
EXPANSION
MERIDIAN MINERALS COMPANY
Proposed Spur to
Bull Mountains Mine No. 1
Cartography:
Checked By:
Date:
N
0
10,000
87
90
3
BILLINGS
HESPER

Figure I-2 Specific location of Project elements

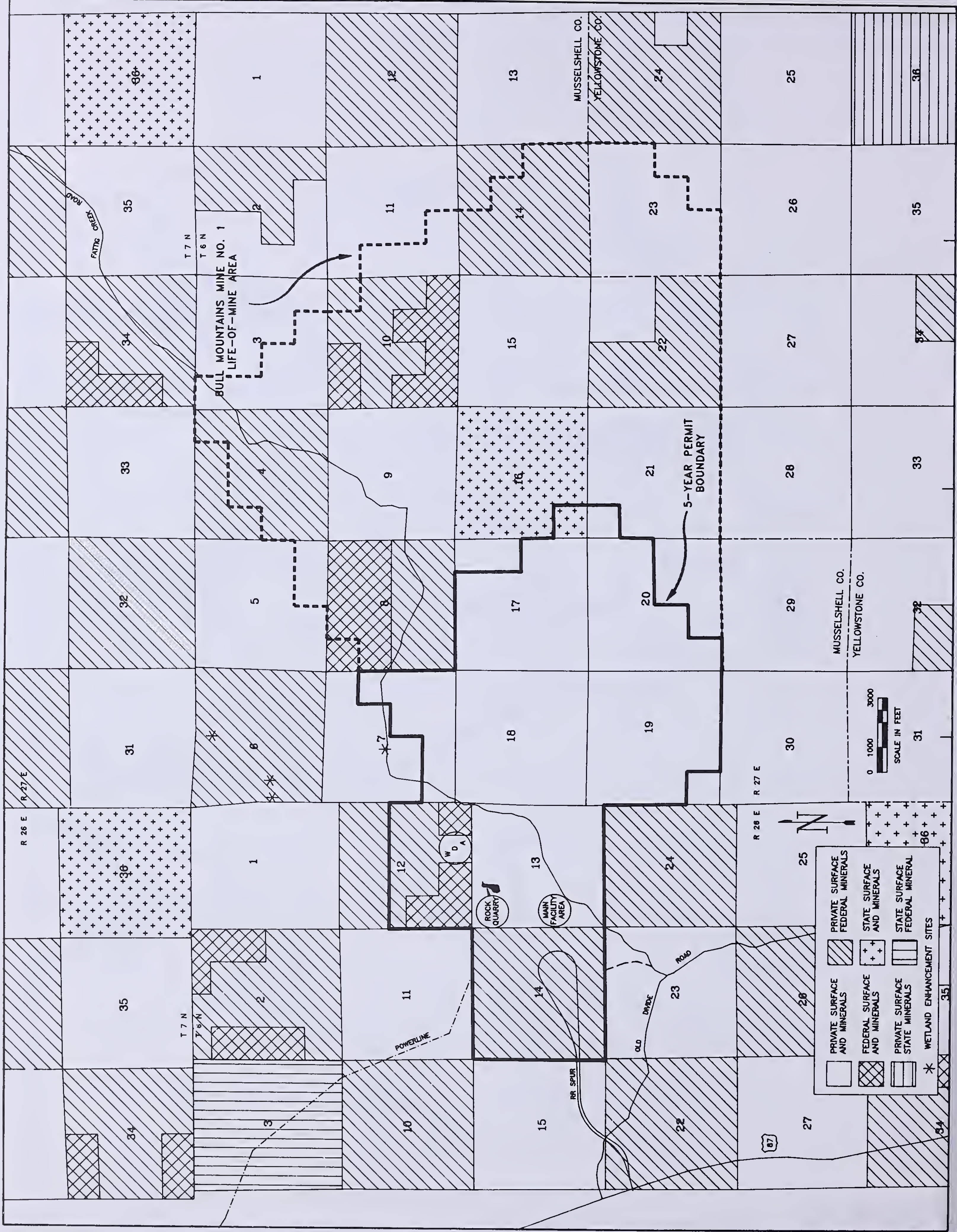
BULL MOUNTAINS MINE NO. 1 LIFE-OF-MINE AREA
5-YEAR PERMIT BOUNDARY
MUSSELSHELL CO.
YELLOWSTONE CO.
T 7 N
T 6 N
R 26 E
R 27 E
FATTIG CREEK ROAD
OLD DIVIDE ROAD
POWERLINE
RR SPUR
ROCK QUARRY
MAIN FACILITY AREA
W D A
87
0 1000 3000
SCALE IN FEET
N
PRIVATE SURFACE AND MINERALS
FEDERAL SURFACE AND MINERALS
PRIVATE SURFACE STATE MINERALS
WETLAND ENHANCEMENT SITES
PRIVATE SURFACE FEDERAL MINERALS
STATE SURFACE AND MINERALS
STATE SURFACE FEDERAL MINERAL
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Figure I-3 Surface and mineral ownership of the area

mining activities, or be disturbed by exploratory drilling, hydrologic mitigation activities, ventilation shaft installation, or associated temporary road construction. Table I-1 provides life-of-mine acreages for the proposed mine and its various support facilities. It compares the total acreage requirement for each component with that portion that would be disturbed by Project activities. New disturbance acreages have been separated from those acreages that were already disturbed by previous activities. MSUMRA requires Montana DSL to analyze the life-of-mine proposal, however permits are granted for 5-year periods. Meridian's current permit application is only for the area proposed to be reviewed in the first 5 years of mine life. The 5-year permit would encompass approximately 4,217 acres, of which about 4,023 are privately owned, 40 are owned by the State of Montana, and about 154 are federally owned. Of the mineral ownership in the 5-year permit area, about 3,096 acres are privately owned, 40 acres are owned by the State of Montana, and approximately 980 acres are federally owned. None of the Federal coal would be mined.

The proposed mine would be in operation for about 44 years from premining construction and development through bond release after final reclamation (mine life). Meridian proposes to eventually recover 100 million tons of clean coal from the mine using both longwall and room-and-pillar methods. The majority of the production, varying from 0.5 to 3.3 million tons of clean coal per year, would be shipped to both domestic and foreign consumers. In addition, the mine would continue to supply the small, local market currently served by the PM Mine. During the first 2 to 3 years of limited operation while the proposed rail spur is under construction, coal would be hauled by truck about 41 miles over County and State roadways from the proposed mine to the upgraded loadout near Huntley. The Huntley loadout would be operational for no more than 24 consecutive months after coal was first deposited at the site. After completion of the proposed 33-mile rail spur, full-scale operations would begin and coal would be loaded directly onto trains at the mine. Table I-2 identifies the duration of each of the phases of the proposed 44-year operation. A total of 450 people eventually could be employed by Meridian in some capacity. About 88 of these jobs would be temporary, associated with various construction activities (Table I-3).

Specific details of Meridian's proposal are included in Appendix A. Specific details of the existing PM Mine facility and coal test pit are included in Appendix B.

TABLE I-1

Acreage Data for the Proposed Bull Mountains Mine No. 1

	PROJECT	DISTURBED SURFACE			SURFACE OWNERSHIP			MINERAL OWNERSHIP #		
	TOTALS	TOTAL	NEW	EXISTING	PRIVATE	STATE	FEDERAL	PRIVATE	STATE	FEDERAL
Life-of-mine area*	10,859	7,041	6,930	111	9,739	640	480	6,513	640	3,706
-Facilities	871	871	770	101	770	0	101	328	0	543
-Coal removal	7,562	6,170	6,160	10	6,613	640	309	5,047	640	1,875
-Buffer	2,426	0	0	0	2,356	0	70	1,138	0	1,288
Rail spur area**	1,165	1,165	1,150	15	1,054	111	0	N/A	N/A	N/A
-Right-of-way	1,160	1,160	1,150	10	1,049	111	0	N/A	N/A	N/A
-Road reloc.	5	5	0	5	5	0	0	N/A	N/A	N/A
Powerline easement**	63	16	6	10	56	7	0	N/A	N/A	N/A
-Upgrade	36	3	0	3	36	0	0	N/A	N/A	N/A
-Extension	27	13	6	7	20	7	0	N/A	N/A	N/A
Wetland enhancement**	22	22	16	6	22	0	0	N/A	N/A	N/A
Huntley loadout	6	6	0	6	6	0	0	6	0	0
COLUMN TOTALS	12,115	8,250	8,102	148	10,877	758	480	6,519	640	3,706

* = Includes rail spur and powerline acreages inside life-of-mine area.
** = Includes only land outside the life-of-mine area.
# = Totals refer to mineral ownership of those components pertinent to agency permitting, not of the total Project.

TABLE I-2

Scheduling Data for the Proposed Bull Mountains Mine No. 1

Activity	Time Requirement
Facility construction/development w/limited mining	2 to 3 years *
Full-scale mining	30 years
Reclamation	1 year
Bond release (minimum time period for total release)	10 years
Total	43 to 44 years

* The Huntley loadout would be operational for no more than 24 consecutive months after coal was first deposited at the site.

TABLE I-3

Employment Data for the Proposed Bull Mountains Mine No. 1

	Mining-Related				
	Admin	Oper.	Total	Const.	Total
Bull Mountains Mine	60	240	300	38	338
Rail Spur	N/A	N/A	N/A	26	26
Powerline Upgd/Exten	N/A	N/A	N/A	12	12
Huntley Loadout	3	9	12	12	24
Huntley Truck Haul	5	45	50	N/A	50
TOTAL EMPLOYEES:	68	294	362	88	450

C. ROLES OF STATE AND FEDERAL AGENCIES IN PROJECT APPROVAL

A number of agencies would be involved in issuance of permits or other approvals before Meridian would be allowed to begin construction and operation of the Project. The primary State and Federal authorizing actions include:

- A Montana *permit to mine coal* from Montana DSL prior to beginning any active coal-mining operations within the proposed life-of-mine area or at Huntley;
- A Montana *land use agreement* from Montana DSL prior to beginning railroad construction across State lands;
- A Federal *land use permit* from Bureau of Land Management (BLM) prior to constructing portions of the proposed surface facility complex on Federal lands; and
- A Federal *certificate of public convenience and necessity* or *an exemption from prior approval requirements* from the U.S. Interstate Commerce Commission (ICC) prior to constructing and operating a rail line that is actively involved in interstate commerce.

In addition, there are several State and Federal authorizing actions that are not necessary for Meridian to begin construction and operation activities at the mine but would be required in the future before full development of the life-of-mine area could occur. They include:

- Successive, 5-year amendments of the Montana *permit to mine coal* from Montana DSL prior to extending active coal-mining operations throughout the life-of-mine area.
- A Montana *coal lease* from Montana DSL prior to removing any State coal reserves.
- A Federal *coal lease* from BLM prior to removing any Federal coal reserves;
- A Federal *mining plan approval* from the Assistant Secretary of the Interior for Lands and Minerals Management, through the Office of Surface Mining (OSM), prior to beginning active coal-mining operations in Federal coal reserves;
- A Federal *permit to mine coal* from OSM prior to beginning any active coal mining operations or rail spur construction on Federal lands within the proposed life-of-mine area.

Detailed discussions of the role these and a number of other State and Federal agencies have in Project approval are included in Appendix D.

Copies of Meridian's PAP can be reviewed by the public at the following Montana DSL offices: Helena, Montana (1625 Eleventh Avenue) and Billings, Montana (Airport Industrial Park).

D. THE ENVIRONMENTAL IMPACT STATEMENT

As required by MEPA directives, this EIS identifies and analyzes the probable impacts to the quality of the human environment that would result should Meridian receive all necessary permits and approvals and subsequently construct and operate the Project. The EIS provides decision makers with information upon which to base a final decision that is fully informed and considers all factors relevant to the proposal. Preparation of the EIS helps assure that the proposed operation is well planned, that the major environmental impacts of the proposed action are analyzed, and that concerns of agencies, organizations, and citizens are considered.

This EIS has been prepared by Montana DSL (the Agency), the responsible agency under MEPA.

Evaluation of the applicant's proposal, including its reasonable alternatives, has been conducted by interdisciplinary review with representatives from a variety of State and Federal agencies concerned with the proposal. Interdisciplinary participation has been provided by a private consultant working under the direction of Montana DSL.

This EIS is not a decision document. It is the result of a comprehensive process used to document the effects of the applicant's proposal and its reasonable alternatives. The decisions regarding the applicant's proposal will be released in a Decision Document prepared by the responsible State Official. The Montana DSL decision will relate only to Meridian's ability to comply with MSUMRA. Decisions by other jurisdictions to issue or not issue approvals related to the applicant's proposal may be aided by the disclosure of impacts available in this analysis. Other agencies may adopt the EIS or portions thereof for their own use, however, they retain the right to require further environmental information or analysis.

E. SCOPE OF THE EIS ANALYSIS

MEPA defines the scope of an EIS as "...the range of reasonable alternatives, mitigation, issues, and potential impacts to be considered..." The agency is directed to "prepare EISs that are analytic rather than encyclopedic," to "discuss the impacts of a proposed action in a level of detail that is proportionate to their significance," and "only include enough discussion to show why more study is not warranted."

- Environmental issues associated with leasing and subsequent development of Federal coal in the United States have been evaluated by the U.S. Department of the Interior (DOI) in the final EIS on the Proposed Federal Coal Leasing Program (U.S. Department of the Interior 1975), the final EIS on the Federal Coal Management Program (U.S. Department of the Interior 1979), and the final EIS on the Federal Coal Management Program Supplement (U.S. Department of the Interior 1985).

- Environmental issues associated with leasing and subsequent development of Federal coal in the Powder River Basin have been evaluated by BLM in the final EIS on Powder River Basin Coal (Bureau of Land Management 1981) and the final EIS on the Economic, Social, and Cultural Supplement to the Powder River Basin Coal analysis (Bureau of Land Management 1990a).

- Environmental issues associated with preliminary coal leasing (e.g., application of the unsuitability criteria) and other land use decisions for Federal lands in the Billings Resource Area, were evaluated by BLM in the final EIS on the Billings Resource Management Plan (Bureau of Land Management 1984). Issues associated with potential leasing and/or the exchange and subsequent development of Federal coal resources in a large portion of the Bull Mountains area were evaluated by BLM in the final EIS on the Bull Mountains Exchange (Bureau of Land Management 1990b).

The Agency prepared this EIS to specifically analyze the probable site-specific and cumulative impacts to the human environment from proposed underground coal mining operations of the Project:

- Site-specific analyses address the direct and indirect impacts that would result from developing the proposed Project and reclamation operations, both on and off the specific areas targeted for disturbance, over the life of the Project.

- The cumulative segments of the analyses address the collective impacts that would result from developing the proposed Project in conjunction with other past, present, and reasonably foreseeable future actions (see Appendix B) in the Roundup/Broadview/Billings/Huntley area.

In order to perform these analyses, certain assumptions were made about items associated with the Project. A complete list of these assumptions has been included in Chapter IV. These assumptions are for the purpose of these analyses only and are not intended to be the final projection of future activities that may or may not materialize in the area over the 44-year mine life. Specific details of the proposed Project as well as those support operations associated with the mine are included in Appendix A.

F. ISSUES RELATING TO THE PROPOSED ACTION

Numerous impact topics regarding the proposed Project were identified by the public during the scoping activities for this EIS. (See Chapter V for a complete discussion of the public participation process.) These topics were evaluated during the impact analysis portion of the EIS process to the extent that they were relevant and would have significant impact. In addition, the Agency supplemented the public's list with additional topics identified by both the EIS interdisciplinary team and Agency management. The impact topics analyzed by the Agency in Chapter IV of the EIS include:

- Air quality: Impacts from construction, operation, and reclamation activities at the mine, along the rail spur right-of-way, and at Huntley; and from the temporary truck haul to Huntley.

- Geologic resources: Impacts to stability of slopes and sandstone cliffs in the life-of-mine area.

- Topography: Impacts to the topographic character of the life-of-mine area and along the rail spur right-of-way.

- Soils: Impacts to productivity of soil materials.
- Hydrology: Impacts to water quality and quantity in the life-of-mine area and at Huntley.
- Vegetation: Impacts to productivity and stability of vegetation communities and to wetlands in and around the life-of-mine area, along the rail spur right-of-way and powerline easement, and at Huntley.
- Wildlife: Impacts to mule deer, elk, antelope, cavity- and tree-nesting birds, sharp-tailed grouse, and turkey.
- Transportation: Impacts to public safety and traffic flow from increases in worker, coal-haul truck, and coal-train traffic.
- Noise: Impacts from construction, operation, and reclamation activities at the mine, along the rail spur right-of-way, and at Huntley, and from the temporary truck haul to Huntley.
- Socioeconomics: Impacts to employment, personal income, population, public sector fiscal conditions, public services, housing, educational and health-care facilities, and social well-being.
- Recreation: Impacts to outdoor recreation opportunities in the Bull Mountains area and in Huntley.
- Land use: Impacts to land uses in the life-of-mine area, along the rail spur right-of-way, and at Huntley.
- Visual resources/aesthetics: Impacts to aesthetics in the Bull Mountains area and at Huntley.
- Cultural resources: Impacts to both known and unknown prehistoric, historic, and Native American (traditional) sites.

G. PUBLIC ISSUES CONSIDERED BUT ELIMINATED

Several additional impact topics were identified by the public during scoping activities for this EIS, but are not being addressed for a variety of reasons. A list of these topics, along with the Agency's rationale for dismissing them from the analyses, is included in Chapter V.

CHAPTER II

ALTERNATIVES

This EIS evaluates 2 prospective actions that constitute the range of reasonable alternative decisions available to the Montana Department of State Lands (Montana DSL), regarding Meridian Minerals Company's (Meridian's) plan of operation for its proposed Bull Mountains Mine No. 1 and associated support facilities (the Project).

A. DESCRIPTION OF THE ALTERNATIVES ANALYZED

1. Alternative 1 (the preferred alternative): Approval of the Applicant's Proposal, With Conditions

Under this alternative, Montana DSL (the Agency) would approve the applicant's plan of operation for the proposed Project (summarized in Appendix A), subject to certain conditions identified by the Agency. These conditions (listed below) are necessary to bring the proposal into compliance with the minimum requirements of the Montana Strip and Underground Mine Reclamation Act (MSUMRA) of 1973 as amended and all other applicable State and Federal laws, such as the Endangered Species Act, National Historic Preservation Act and associated regulations, Archeological Resources Protection Act, Montana Antiquities Act, American Indian Religious Freedom Act, Montana Human Skeletal Remains and Burial Site Protection Act, Montana Clean Air Act, and Federal Water Pollution Control Act as amended (i.e., the Clean Water Act). (See Appendix D for a discussion of the role that State and Federal agencies have in Project approval).

For the Project, the Agency's conditions of approval would include but not be limited to the following:

- Condition No. 1.--The operator shall submit a detailed evaluation of the life-of-mine area to the Agency identifying steep slope areas that have a high probability for disruption of subsurface deposits due to mining-related subsidence. This evaluation shall be submitted at least 2 years prior to disturbance. In coordination with the Montana State Historic Preservation Officer (SHPO), the Agency will identify additional cultural resource inventory, evaluation, and mitigation measures that may be required.

- Condition No. 2.--The operator shall mitigate anticipated mining and mining-related impacts (including those associated with rail spur development) to prehistoric, historic, or Native American (traditional) resources found to be eligible for nomination to the National Register of Historic Places. The operator shall submit a mitigation/data recovery plan to the Agency for approval, in coordination with Montana SHPO, at least 2 years prior to disturbance. The approved mitigation/data recovery plan must be successfully completed prior to disturbing the site(s).

- Condition No. 3.--If, during mining, construction and reclamation operations, previously undiscovered prehistoric, historic, or traditional resources are discovered, the operator shall ensure that the resources are not disturbed and shall notify the Agency of their nature and location. The operator shall take such necessary actions as are required by the Agency to protect the resource, in coordination with Montana SHPO.

- Condition No. 4.--Meridian shall obtain a Federal permit prior to use of the Federal portions of the Waste Disposal Area (WDA).

- Condition No. 5--Pave Fattig Creek Road, keep it constantly damp, or treat it with a palliative to prevent dust from being generated in the vicinity of the residences near the intersection of Fattig Creek, PM Mine, and Old Divide roads.

- Condition No. 6--Construct a wooden fence between the park at Huntley and the railroad tracks to keep children away from the unit train cars.

- Condition No. 7--Redesign the loadout access route using Highway 312 and eastern Northern Avenue to remove coal-hauling trucks from Heath Street.

- Condition No. 8--Post and enforce a 15 MPH speed limit for trucks on Northern Avenue.

- Condition No. 9--Prohibit truck drivers from using "jake" brakes east of the river bridge on Highway 312 and anywhere on Northern Avenue or in the loadout facility.

- Condition No. 10--Seek authorization from the appropriate Federal agency to use flashing lights instead of the standard audible back-up alarm on vehicles and equipment operating in the loadout area.

- Condition No. 11--Operate the Huntley loadout for no more than 24 consecutive months from the date coal is first deposited on the site.

- Condition No. 12--As a weed control measure, steam clean all used machinery before use at the loadout.

- Condition No. 13--Tarp all trailers hauling coal on public roadways.

- Condition No. 14--Assign and stencil identifying numbers and a phone number on coal trucks for easy identification by the public to accommodate citizen complaints or communications.

2. Alternative 2: Disapproval of the Applicant's Proposal

Under this alternative, Montana DSL would disapprove the applicant's plan of operation for the proposed Project (summarized in Appendix A) because (1) it did not meet the requirements of all applicable State laws, or (2) the proposal imposed, or had the potential to impose, unacceptable impacts on the human environment.

For the purposes of this EIS, the "no action" alternative is considered to be equivalent to disapproval of the applicant's proposal.

B. OTHER ALTERNATIVES CONSIDERED

The following alternatives were considered during the preparation of this EIS but were eliminated from detailed analysis:

- Alternate mine locations were presented in the BLM land exchange EIS.

- The alternative to approve the applicant's proposal without additional conditions was evaluated and determined to be inappropriate. MSUMRA requires Montana DSL to approve, conditionally approve, or disapprove the permit application submitted by Meridian. However, if additional conditions are necessary for the application to be acceptable under the applicable regulations, approving it without those conditions would not be a reasonable alternative.

- Alternatives to the development of coal resources are inappropriate in the present analysis because Meridian owns or holds active leases for the majority of the coal resources at the Bull Mountains Mine No. 1 mine site. Therefore, these alternatives were not analyzed further.

- Alternatives that would require the use of room-and-pillar mining methods throughout the mine, rather than the proposed combination of room-and-pillar and longwall methods, were determined to be unreasonable due to the increased costs and decreased levels of coal recovery that would result. Environmental impacts associated with room-and-pillar methods were determined to be comparable to those associated with longwall methods over the long term. (See Appendix C for a discussion of the methods and equipment associated with the underground mining of coal.)

- An alternative was evaluated that would permit longwall mining but selectively restrict or deny it where cover depths were less than some critical value or where there were sensitive surface resources. Accepted longwall mining techniques dictate that panels cannot be arbitrarily moved. Since this alternative would not be compatible with its longwall mining panel layout sequence, the alternative was deemed impractical.

- Alternatives that would require the use of "backstowing" techniques to dispose of the waste in mined-out portions of the mine, rather than develop a head-of-hollow fill for mine waste disposal (the proposed WDA) were evaluated. They were eliminated from further analysis because although theoretically possible, backstowing would be economically impractical and generally incompatible with the planned caving and subsidence associated with the longwall method of coal removal. (See Appendix C for a discussion of the methods and equipment associated with the underground mining of coal.)

- Three alternatives to the applicant's proposed location for the 33-mile rail spur were evaluated. Two alternatives would rebuild portions of the old Milwaukee Railroad right-of-way between Roundup and the Burlington Northern mainline near Cushman. One would involve new construction to the north along Rehder and Halfbreed creeks to Riverside and the Milwaukee right-of-way; the other would involve new construction overland to the west to Harper Coulee, northwest to Goulding Creek, and then north to the Milwaukee right-of-way. One alternative would involve new construction overland to the southeast near Shepherd and then south to the mainline east of Huntley and south of the Yellowstone River.

  These alternatives were determined not to be reasonable for a variety of reasons, including the increased cost of construction, the potential for increased impacts to sensitive areas with wetland and wildlife habitat values, and increases in engineering complexity. All involve a longer rail spur, increasing the levels of surface disturbance, the amount and cost of construction material, the amount and cost of right-of-way, and the number of landowners affected. Details of the Agency's evaluation of these routes is available for review in Montana DSL files in Helena.

- Two routing adjustments were made for portions of Meridian's preferred proposal for the 33-mile rail spur. These adjustments were evaluated and determined to be unreasonable due to landowner concern with the disruption of farming and ranching operations and the need to avoid sensitive wetlands and farmlands as much as possible.

- A total of 11 alternatives to temporary use of the existing coal loadout facility at Huntley was evaluated. The sites were located within 4 general areas: the Broadview/Comanche/Acton area, Lavina/Cushman/Belmont area, Roundup area, and Billings/Huntley area (specifically, in the Billings/Huntley area, the Coors Warehouse property east of Huntley and an area near the intersection of Highway 312 and the Burlington Northern mainline west of Billings). The process followed by Meridian for selection of the Huntley loadout site included consideration of:

  - Power availability;
  - Water availability;
  - Total capital for development;
  - Whether there was adequate space for storage of 115 railroad cars, and total length of siding;
  - Track availability, with low usage;

- Previous disturbance to the site;
- Existing truck traffic;
- Service and spare parts availability;
- Mileage to location from mine;
- Operating cost and/or distance for railroad using cost estimates;
- Road conditions and operating costs; and
- Emergency services

Meridian's physical and cost comparison of all the sites is presented in Table II-1. Meridian's second choice, Mossmain, was eliminated because of a concern about disturbance to wetlands along track frontage. Mossmain was also the farthest site from the mine. Subsequent to Meridian's choice of the Huntley site in January 1991, a review team of personnel from Meridian, Montana DSL, and GeoResearch, Inc. conducted an analysis of 11 potential coal loadout sites to verify Meridian's initial analysis. This verification focused more attention on existing and surrounding land uses and the consequences of an adjacent industrial loadout site in any given vicinity.

The increased costs and environmental impacts that would be associated with the required upgrade of County and State roadways, as well as the purchase and construction of a new short-term facility, were determined to be excessive and unreasonable when compared to the use of the existing paved roadways and loadout facilities at Huntley. Details of the Agency evaluation of these sites is available for review in Montana DSL files in Helena.

- Alternative methods of permanent coal transportation from the mine, including the use of either conveyors or trucks to eliminate the need for rail spur construction and operation were evaluated. The Agency determined both methods to be unreasonable due to concern over cost, maintenance, and environmental degradation issues. Both methods would require the construction and use of a second, large, coal-handling facility over the 33-year period of coal removal from the proposed mine, complicating site selection problems already associated with the temporary truck haul and loadout.

  The considerable costs of trucking would not only make the economics of mine development questionable, but would require local communities to accommodate the large amount of haul-truck traffic that would be required at full production for the entire mine life. The conveyor, while eliminating noise and nuisance problems associated with both trains and trucks, would encounter problems with engineering complexity and system reliability as well as all of the route selection and environmental protection problems of the rail spur proposal.

TABLE II-1
Meridian's Comparison of Alternative Loadout Sites

LOADOUT											
	Roundup	Lavina	Cushman	Belmont	Broadview	Commanche	Acton	Billings	Mossmain	Huntley	Coors
POWER AVAILABILITY	1-1/2 miles	1 mile	2 miles	7 miles	3 phases here	single phase	single phase	at different locations	1-1/2 miles would need work + transformers	3 phase power availabile	3 phase power available
WATER AVAILABILITY Drillers	From Musselshell River	From Musselshell River	From Musselshell River	1700' vertical	1500' vertical	1000' vertical	Water not good to 1000', use cisterns	City or Yellowstone River	Yellowstone Aquifer	Shallow 85' gravel	Shallow 85' gravel
WELL CAPACITY (Geologists)	Limited by pump size	Limited by pump size	Limited by pump size	<100 GPM	<100 GPM	<100 GPM	Requires treatement <100 GPM	Limited by line size or pump size	Limited by pump size	Limited by: 1. Pump size 2. Line size City water availability	Limited by: 1. Pump size 2. Line size City water availability
STORAGE, TRACK (siding)	Build 31 miles track	Build 10 miles track	adequate siding	No siding	.4+.55E .2+.25N siding	750' dead end north	1000' dead end south	Any amount needed heavy traffic	2 tracks	South side 115 cars, north side 29 cars	South 15 cars
STORAGE, STOCKPILE	No disturbed area	No disturbed area	No disturbed area	No disturbed area	No storage available area	No disturbed area	No disturbed area	No storage available	Limited disturbed area	30,000 tons of beets	N/A
TRACK USED	Low	Low	Low	Low	Low	Low	Low	High	High	M/L High storage	M/L High
PREVIOUS DISTURBANCE AREAS	None	None	2 acres	None	6 acres but cannot be accessed in center of tracks	3 acres	1-1/2 acres	None available	10 acres stockpile across Frontage Road	8 acres	N/A
EXISTING TRAFFIC	Low	Low	Low	Low	Medium, 3 elevators	Low	Low	Medium	Low	Beet trucks since 1929 at 4000 TPD which is our design tonnage. All-weather roads	
1) REPAIR 2) SERVICE AVAILABILITY*	1) Good 2) Good	1) Fair 2) Fair	1) Poor 2) Poor	1) Poor 2) Poor	1) Good 2) Good	1) Billings 2) Broadview	1) Billings 2) Broadview	1) Good 2) Good	1) Fair 2) Fair	1) Good 2) Good	1) Good 2) Good

TABLE II-1 (Continued)

LOADOUT											
	Roundup	**Lavina**	**Cushman**	**Belmont**	**Broadview**	**Commanche**	**Acton**	**Billings**	**Mossmain**	**Huntley**	**Coors**
MILEAGE** from mine	15.5+1.3 16.8	38.1+1.3 39.4	47.5+2.8 50.3	38.7+6.8 45.5	13.3+23.0 36.3	13.3+25.2 38.5	22.5+12.8 35.3	34.4+1.3 35.7	50.8+1.3 52.1	39.8+1.3 41.1	40.6+1.3 41.9
ROAD CONDITIONS	Low traffic volumes	Low traffic volumes	Rebuild bridge	Replace cattle crossing, good road needs upgrade & widening	Needs improve-ment, large construction project	Very rough, large construc-tion project	Very rough County road, needs work	Heavy existing traffic	All paved - 3 stops	Good roads, traffic medium	Good roads, traffic medium
OPER. MILES FOR R.R. to Laurel	74.1	52.5	42.5	40.5	31.5	24.5	20.5	12.5	2.5	24.5	26.0
WEATHER CONDITIONS, WIND DIRECTION	No adverse problems	Must be to East of town	No houses close	No houses close	Majority of population in major wind direction	No houses close	Houses & bar to East in main directdion of wind	Bad location air quality	No houses close	Prevailing wind good	Prevailing wind good
EMERGENCY SERVICES Fire Ambulance Hospital	Roundup	Billings	Billings	Billings	Broadview Billings Billings	Broadview Billings Billings	Broadview Billings Billings	Billings & Laurel Billings Billings	Billings & Laurel Laurel Billings	Shepherd, Huntley & Worden Worden Billings	Shepherd, Huntley & Worden Worden Billings
TOTAL ESTIMATED CAPITAL Track Highway Stockpile Generator	6,500,000 150,000 – 50,000 50,000	3,173,000 3,000 150,000 – 50,000 50,000	435,000 150,000 300,000 50,000 50,000	1,000,000 150,000 500,000 50,000 50,000	170,000 150,000 1,500,000 20,000 20,000	870,800 150,000 1,260,000 50,000 50,000	740,000 150,000 640,000 50,000 50,000	200,000 150000 80,000 20,000 20,000	200,000 150,000 80,000 20,000 20,000	0 150,000 80,000 15,000 15,000	740,000 150,000 80,000 20,000 20,000
CAPITAL SUMMARY	6,700,000	3,423,000	985,000	1,750,000	1,860,000	2,205,000	1,467,000	400,000	330,000	135,000	890,000

NOTES:
* (e.g., Mechanical, electrical)
** First number is paved road - Second number is unimproved road - Bottom number is total truck miles

C. COMPARISON OF ALTERNATIVES

Table IV-5 provides a complete listing, by discipline, of all impact comparisons from the Chapter IV analysis. Table II-2 provides a selected listing of those comparisons that include more important impacts. Summaries of the comparisons follow:

- Alternative 1 (approval of the applicant's proposal, with conditions): Under this alternative, major and significant impacts could occur to certain aspects of vegetation, transportation, and visual/ aesthetic resources.

  Certain aspects of transportation, socioeconomic, and cultural resources may sustain moderate to major impacts, some of which may have the potential to become significant.

  Certain aspects of topography, soils, vegetation, land use, visual/aesthetics, and cultural resources could be irretrievably lost. Certain aspects of visual/aesthetic resources could also be irreversably lost.

- Alternative 2 (disapproval of the applicant's proposal): Under this alternative, major and significant negative impacts could occur to certain aspects of socioeconomic resources. For other resources in the area, impacts would continue at existing levels. Incremental impacts resulting from mining and development of the Project would not occur.

TABLE II-2

Summary of Important Impacts by Alternative for Bull Mountains Mine No. 1

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
TOPOGRAPHY		
Impacts to the topography of surface facility complex.	Moderate to major over short term and minor to negligible over long term. Irretrievable loss of topographical diversity due to WDA.	Negligible impacts.
SOILS		
Impacts to soil productivity in areas of mining-related surface disturbance.	Moderate to major over short term and minor over long term. Productivity losses under track ballast would be irretrievable.	Negligible impacts.
HYDROLOGY		
Impacts to ground and surface water supplies in and around the life-of-mine area from mining and mining-related subsidence.	Minor to moderate over the short and long terms.	Negligible impacts.
VEGETATION		
Impacts to wetlands in/around life-of-mine area.	Moderate over the short term and minor over the long term.	Minor impacts
Impacts to vegetative productivity and stability along powerline and rail corridors.	Moderate to major over short term depending on revegetation success and weed invasion and negligible over long term. Irretrievable loss of productivity until reclamation succeeded.	Negligible to minor impacts.
Impacts to vegetative productivity and stability within the surface facility complex and Huntley loadout.	Moderate over short term and negligible over long term. Irretrievable loss of productivity until reclamation succeeded.	Negligible impacts.
WILDLIFE		
Impacts to wildlife productivity within the life-of-mine area from mining-related subsidence.	Minor to moderate over the short term and negligible over the long term.	Negligible impacts.

TABLE II-2 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
TRANSPORTATION		
Impacts to traffic flow and public safety along public highways from mining-related traffic.	Moderate and potentially significant in first 2 to 3 years. Negligible over long term.	Minor impacts.
Impacts to the integrity/stability of County and State roads from coal trucks.	Major and significant over short term and minor to moderate over long term.	Minor impacts.
SOCIOECONOMICS		
Impacts to educational facilities.	Moderate and potentially significant over short term and negligible over long term.	Minor impacts.
Impacts to social well-being in Bull Mountains area.	Moderate and potentially significant over short term and minor long term.	Moderately negative impacts for those favoring the Project and moderately positive impacts for those opposing it.
Impacts to social well-being in the Huntley area.	Moderate and potentially significant over short term and moderately positive over long term.	Moderately negative impacts for those favoring the Project and moderately positive impacts for those opposing it.
Impacts to public sector fiscal conditions.	Major and beneficial to Musselshell County and minor and beneficial to Yellowstone County over short term. Over long term, major and negative to Musselshell County and minor and negative to Yellowstone County.	In foregone benefits, major and negative to Musselshell County and minor and negative to Yellowstone County.
Impacts to employment, personal income, and population.	Moderate and beneficial to Musselshell County over short term. Moderate and negative to Musselshell County over long term.	In foregone benefits, moderate and negative to Musselshell County and minor and negative to Yellowstone County.
LAND USE		
Impacts to land use along the rail spur from construction and train traffic.	Moderate over short and long terms. Loss of agricultural productivity and other development would be irretrievable.	Negligible impacts.

TABLE II-2 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
VISUAL RESOURCE/AESTHETICS		
Impacts to visuals/aesthetics in the Bull Mountains area.	Minor to moderate over short and long terms. WDA would constitute an irretrievable and irreversable commitment of visual/aesthetic resources.	Negligible impacts.
Impacts to visual/aesthetics in the Bull Mountains area from the rail spur.	Minor to moderate over short and long terms. Cuts-and-fills and structures would constitute an irretrievable and irreversable commitment of visual/aesthetic resources.	Negligible impacts.
Impacts to visual/aesthetics from Huntley loadout.	Major and significant over short term and negligible over long term.	Negligible to moderate.
CULTURAL RESOURCES		
Impacts to prehistoric and historic resources.	Impacts minor and permanent. Data recovery could be beneficial.	Negligible impacts.
Impacts to Native American resources.	Impacts minor, permanent, and potentially significant. Several potentially sensitive areas may be irretrievably disturbed.	Negligible impacts.

CHAPTER III

DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. CLIMATE AND AIR QUALITY

1. Regional Climate

Climate in southcentral Montana is classified as Middle Latitude Steppe. This semiarid region is characterized by low rainfall, low humidity, clear skies, and relatively large annual and diurnal temperature ranges.

Average annual precipitation for the region is about 14 inches with about one-third falling during May and June. The period of least precipitation is November through February. Heavy snows, from 6 inches to 1 foot, are not uncommon during the winter. Snow seldom accumulates to great depths because of thawing from strong west-to-southwest downslope winds called Chinooks. Thunderstorms occur on about 30 days during a typical year, mainly from May through September. These storms are frequently accompanied by strong, gusty winds and occasional hail. Destructive hailstorms are infrequent. Upslope fog and low clouds, accompanied by east and northeast winds, are common during the colder two-thirds of the year with an occasional occurrence during the warmest months. A summary of climatological data, including means and extremes, for Billings, Montana is presented in Table E-1, Appendix E. These data are representative for the region.

Three important meteorological factors influence the dispersion of pollutants in the atmosphere: mixing height, wind speed, and wind direction. Mixing height is the height above ground within which rising warm air from the surface will mix by convection. The degree to which pollutants are diluted in this mixed layer is determined by local atmospheric conditions, terrain configuration, and source location. Mixing heights vary diurnally and with season. Mixing is strongest during the summer afternoons and weakest during the winter mornings (see Table III-1).

Wind speed has an important effect on area ventilation and the dilution of pollutant concentrations from individual sources. Light winds, in conjunction with large source emissions, may lead to an accumulation of pollutants that can move to downwind areas. With the average 8-to-12 mile per hour (MPH), prevailing westerly wind in central Montana, downwind is usually to the east.

TABLE III-1

Diurnal and Seasonal Variation of Mixing Heights (Feet) Over Southcentral Montana

Season	Morning	Afternoon
Winter	800-1,300	2,600-3,280
Spring	1,300-1,800	7,900-8,200
Summer	980-1,300	9,200-9,800
Autumn	980-1,300	5,250-5,900
Annual	1,150-1,300	6,500-6,890

Source: Holzworth (1972)

2. Local Winds

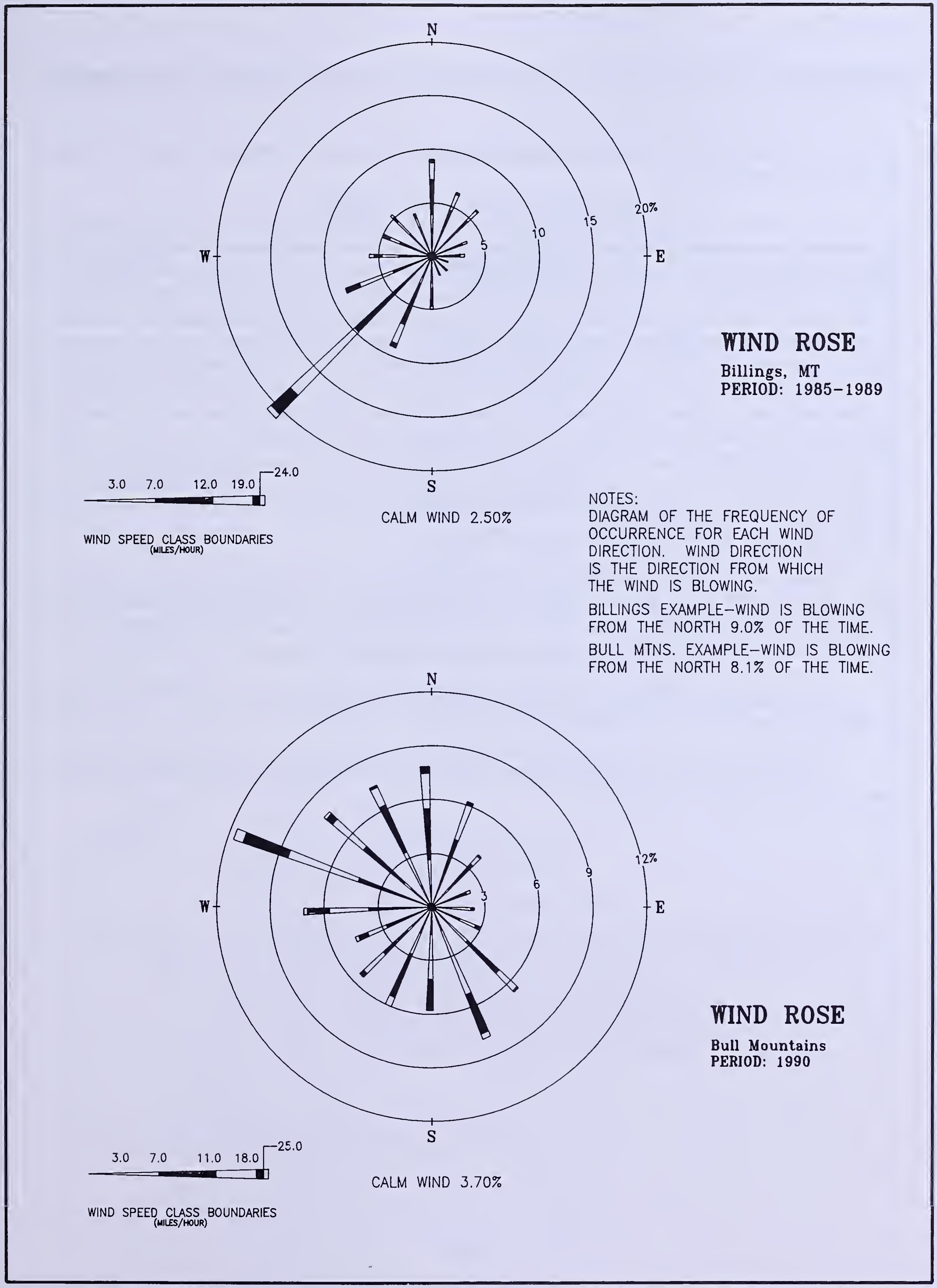
Because Billings and Huntley are located in the same southwest- to northeast-oriented river valley, they have similar prevailing wind conditions. Therefore, data from Billings may be used for Huntley. The annual wind rose for Billings, shown in Figure III-1, indicates a prevailing wind from the southwest.

The 1990 wind rose for the Bull Mountains area (see Figure III-1), indicates that the wind directions are more uniformly distributed with the prevailing wind from the west-northwest.

3. Air Quality

Air quality is described by the concentration of various pollutants and their interactions in the atmosphere. Pollution effects on receptors establish the extent to which that quality is degraded. Measurement of pollutants is expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Both long-term climatic factors and short-term weather fluctuations are considered part of the air quality resource because they control dispersion and affect concentrations. Physical effects of air quality depend on the characteristics of the receptors and the type, amount, and duration of exposure. Air quality standards specify upper limits of pollutant concentrations and durations of exposure. Air pollutant concentrations within the standards are generally not considered to be detrimental to public health and welfare.

The relative importance of pollutant concentrations can be determined by comparison with an appropriate national and/or state ambient air quality standard. An area is designated by the Environmental Protection Agency (EPA) as being in attainment for a pollutant if ambient concentrations of that pollutant are below the National Ambient Air Quality Standards (NAAQS). An area is not in attainment if violations of NAAQS for that pollutant occur. Areas where insufficient data are available



WIND ROSE

Billings, MT
PERIOD: 1985-1989

CALM WIND 2.50%

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE FOR EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING.

BILLINGS EXAMPLE-WIND IS BLOWING FROM THE NORTH 9.0% OF THE TIME.

BULL MTNS. EXAMPLE-WIND IS BLOWING FROM THE NORTH 8.1% OF THE TIME.

WIND ROSE

Bull Mountains
PERIOD: 1990

CALM WIND 3.70%

Figure III-1 Wind roses, Billings, Montana, and Bull Mountains, Montana

to make an attainment status designation are listed as unclassified and are treated as being in attainment for regulatory purposes.

The Federal Prevention of Significant Deterioration (PSD) program, enacted by Congress, is implemented in large part through the use of "increments" and area classification that effectively define "significant deterioration" for individual pollutants. The Clean Air Act's (CAA) area classification scheme for PSD establishes 3 classes of geographic areas and applies increments of different stringency to each class. The CAA established Class I for areas of special national concern where the need to prevent significant deterioration in air quality is greatest. Consequently, the most restrictive increments apply in Class I areas. Class I areas include all international parks as well as national parks, national wilderness areas, and national memorial parks exceeding certain sizes. Less restrictive increments apply in areas designated as Class II or Class III. Class II areas are all PSD areas that are designated as in attainment or unclassifiable with respect to the NAAQS and are not classified in the CAA as Class I. Most of southcentral Montana, including the proposed Project area, is classified as a Class II area under the Federal PSD regulations. The Class III area designation would permit more deterioration in air quality in specific areas designated by the states for higher levels of industrial development and emissions growth. There are as yet no Class III areas in Montana.

Montana air quality standards have been established for the following pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter smaller than 10 micrometers in diameter (PM_{10}), lead (Pb), hydrogen sulfide (H_2S), Foliar fluoride, settled particulate (dust-fall), and visibility. Montana ambient air quality standards are presented in Table III-2.

All of the areas involved in the proposed Project are considered in attainment of all the National and Montana ambient air quality standards.

The PSD maximum allowable increases in pollutant concentration over the baseline in a Class II area are as follows (40 CFR 52.21):

TABLE III-2

Montana Ambient Air Quality Standards

Pollutant	Montana Standard
Particulate Matter (PM$_{10}$)	50 μg/m^3 expected annual average
	150 μg/m^3 expected 24-hr average*
Sulfur Dioxide	0.02 ppm annual average
	0.10 ppm 24-hr average*
	0.50 ppm 1-hr average**
Carbon Monoxide	9 ppm 8-hr average*
	23 ppm hourly average**
Nitrogen Dioxide	0.05 ppm annual average
	0.30 ppm hourly average*
Photochemical Oxidants (ozone)	0.10 hourly average*
Lead	1.5 μg/m^3 90-day average
Foliar Fluoride	35 μg/g grazing season average
	50 μg/g monthly average
Hydrogen Sulfide	0.05 ppm hourly average*
Settled Particulate (Dust-fall)	10 gm/m^2 30-day average
Visibility	Particle scattering coefficient of 3x10^5 per meter annual average***

Notes: PM$_{10}$ = particulate matter with an aerodynamic diameter less than 10 microns.
μg/m^3 = micrograms pollutant per cubic meter of sampled air.
ppm = parts pollutant per million parts of sampled air.
* = Not to be exceeded more than once per year.
** = Not to be exceeded more than 18 times per year.
*** = Applies to PSD mandatory Class I areas.

Source: Montana Air Quality Bureau 1991.

Pollutant	Maximum Allowable Increase ($\mu g/m^3$)
• Particulate Matter (TSP)	
annual geometric mean	19
24-hour maximum	37
• Sulfur Dioxide	
Annual arithmetic mean	20
24-hour maximum	91
3-hour maximum	512
• Nitrogen Dioxide	
Annual arithmetic mean	25

Baseline PSD concentrations have not been established for the proposed Project area, which is within the Billings Intrastate Air Quality Control Region (AQCR Number 140) (CFR 40:81.88). Primary existing sources of air pollution in the area are as follows:

- Asphalt plants (particulates);
- Gravel crushers (particulates);
- Home heating devices or equipment (particulates, CO);
- Motor vehicles (CO, NO_x, hydrocarbons, re-entrained particulates);
- Agricultural activities (particulates);
- Wind erosion (particulates);
- Open burning (particulates); and
- Mining operations (particulates).

In addition, Yellowstone County has the following pollution sources:

- Three oil refineries (SO_x, H_2S, NO_x, hydrocarbons, particulates)
- Coal-fired power plant (SO_2, NO_x, particulates)
- Sulfur plant (SO_x, SO_3)
- Grain processing (particulates)
- Sugar beet processing plant

PM_{10} monitoring data, obtained during 1989 and 1990 near the proposed mine site, show the maximum 24-hour concentration was 53 $\mu g/m^3$. The annual average concentration for this area was approximately 9 $\mu g/m^3$. In the Huntley area, the maximum 24-hour PM_{10} concentration was about 41 $\mu g/m^3$ with an annual average of about 14 $\mu g/m^3$.

B. GEOLOGY

The Bull Mountains lie within that portion of the Bull Mountains basin defined by sedimentary rocks of the Fort Union Formation deposited during the later portion of the tertiary period. The sandstones, siltstones, shales, and coal beds of the Fort Union are divided between the Tullock member, the Lebo Shale, and the upper member, the Tongue River (see Figure III-2). It is the Tongue River member that contains the coal seam of commercial interest for the proposed underground mine.

Stratigraphically, the highly dissected terrain, underlain by discontinuous sandstones, siltstones, and shales and relatively thin coal seams, is found in the Bull Mountains area and throughout eastern Montana. At the surface, exposed sandstone cliffs and steep slopes in portions of the life-of-mine area naturally weather and erode, resulting in toppling of rock and sloughing of surface materials on slopes. Structurally, the proposed life-of-mine area is underlain by a northwest-plunging syncline, or fold in rock layers where the layers dip (1 to 2 degrees) inward towards an axis.

1. Mineral Resources

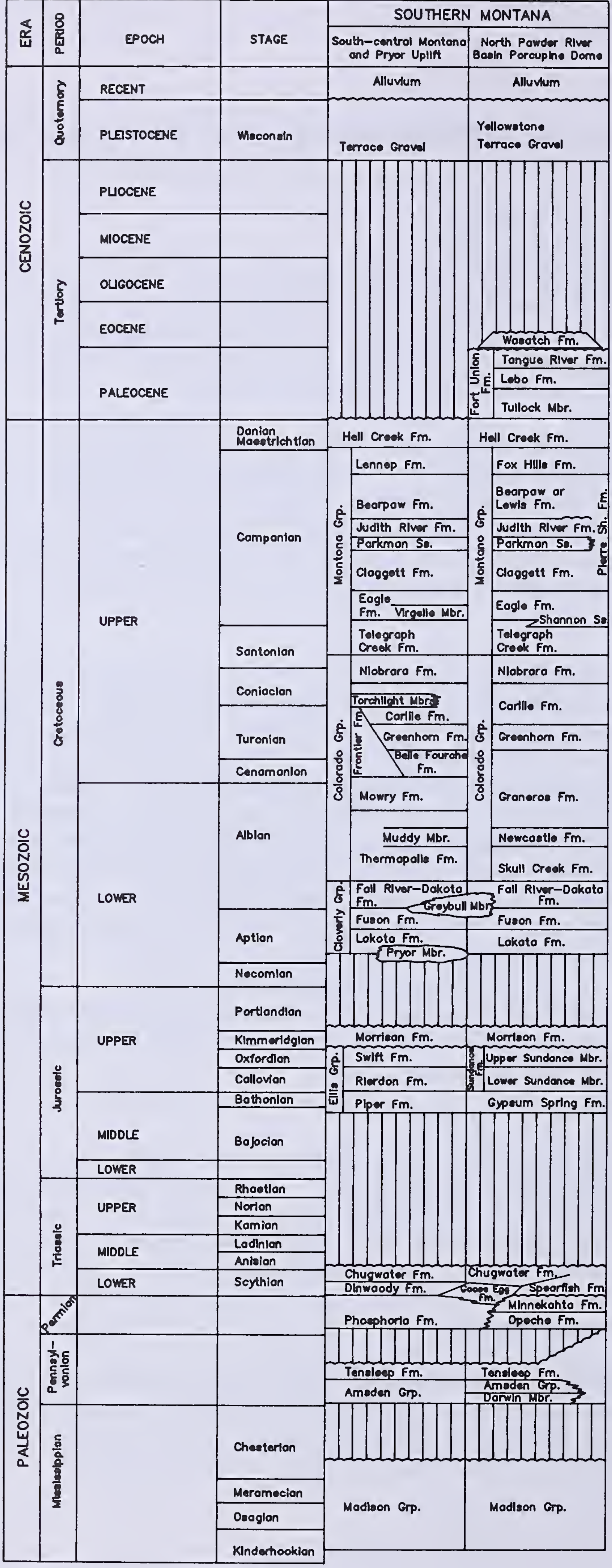
The Mammoth Coal seam is of primary interest for the proposed mine. This seam is found within the Tongue River member of the Fort Union Formation. The Mammoth Coal ranges from 8 to 15 feet thick, thinnest in the west and thickening towards the east. Locally, some outcrops have burned as a result of natural causes, baking overlying sandstones and shales into a rock called clinker. Clinker beds up to 90 feet thick characterize higher elevations in portions of the area. The Mammoth Coal reserves contain a low amount of ash that averages 10.2 percent; a low 0.87 percent of sulfur; a high 42.12 percent of fixed carbon; a low 17.65 percent of moisture; an average 29.68 percent of volatile matter; and a moderate 9640 BTU/lb (British Thermal Units, the energy contained in 1 pound of coal). About 218 million tons of in-place coal reserves have been identified within the proposed life-of-mine area in 14 different seams, including the Mammoth.

Sand and gravel resources can be found throughout Musselshell and Yellowstone counties. Oil and gas resources may be present in the area. While there has been exploration for oil and gas in the past, there are no known plans to develop those resources at this time.

2. Paleontological Resources

Paleontological resources are the physical remains, impressions, or traces of plants or animals from a former geological age. They include casts, molds, and trace fossils such as burrows or tracks. Fossil localities typically include surface outcrops, areas where subsurface deposits are exposed, and special environments favoring preservation, such as caves, peat bogs, and tar pits. Paleontological resources are important mainly for their potential to provide scientific information on the evolutionary history of plants and animals and their environments.

Shales and sandstones of the Fort Union Formation are known to contain abundant plant fossils including evidence of fern, moss, cycad, conifer, palm, water lily, birch, hazel, hickory, viburnum, and various angiosperms (Brown 1952; Perry 1975; Spindel 1975; Reynolds and Robertson 1978; Windmayer 1977). The animal fossils are much more limited and include turtles, mollusks, and insects.


SOUTHERN MONTANA
ERA
PERIOD
EPOCH
STAGE
South–central Montana and Pryor Uplift
North Pawder River Basin Porcupine Dome
CENOZOIC
Quaternary
RECENT
Alluvium
Alluvium
PLEISTOCENE
Wisconsin
Terrace Gravel
Yellowstone Terrace Gravel
Tertiary
PLIOCENE
MIOCENE
OLIGOCENE
EOCENE
Wasatch Fm.
PALEOCENE
Fort Union Fm.
Tongue River Fm.
Lebo Fm.
Tullock Mbr.
MESOZOIC
Cretaceous
UPPER
Danian Maestrichtian
Hell Creek Fm.
Hell Creek Fm.
Campanian
Montana Grp.
Lennep Fm.
Bearpaw Fm.
Judith River Fm.
Parkman Ss.
Claggett Fm.
Eagle Fm.
Virgelle Mbr.
Montana Grp.
Fox Hills Fm.
Bearpaw or Lewis Fm.
Judith River Fm.
Parkman Ss.
Claggett Fm.
Eagle Fm.
Shannon Ss.
Pierre Sh. Fm.
Santonian
Telegraph Creek Fm.
Telegraph Creek Fm.
Coniacian
Colorado Grp.
Niobrara Fm.
Torchlight Mbr.
Frontier Fm.
Carlile Fm.
Turonian
Greenhorn Fm.
Cenomanian
Belle Fourche Fm.
Mowry Fm.
Colorado Grp.
Niobrara Fm.
Carlile Fm.
Greenhorn Fm.
Graneros Fm.
LOWER
Albian
Muddy Mbr.
Thermopolis Fm.
Newcastle Fm.
Skull Creek Fm.
Aptian
Cloverly Grp.
Fall River–Dakota Fm.
Greybull Mbr.
Fuson Fm.
Lakota Fm.
Pryor Mbr.
Fall River–Dakota Fm.
Fuson Fm.
Lakota Fm.
Neocomian
Jurassic
UPPER
Portlandian
Kimmeridgian
Morrison Fm.
Morrison Fm.
Oxfordian
Ellis Grp.
Swift Fm.
Callovian
Rierdon Fm.
Bathonian
Piper Fm.
Sundance Fm.
Upper Sundance Mbr.
Lower Sundance Mbr.
Gypsum Spring Fm.
MIDDLE
Bajocian
LOWER
Triassic
UPPER
Rhaetian
Norian
Karnian
MIDDLE
Ladinian
Anisian
LOWER
Scythian
Chugwater Fm.
Dinwoody Fm.
Chugwater Fm.
Goose Egg Fm.
Spearfish Fm.
PALEOZOIC
Permian
Phosphoria Fm.
Minnekahta Fm.
Opeche Fm.
Pennsylvanian
Tensleep Fm.
Amsden Grp.
Tensleep Fm.
Amsden Grp.
Darwin Mbr.
Mississippian
Chesterian
Meramecian
Osagian
Kinderhookian
Madison Grp.
Madison Grp.

Source: Montana Bureau of Mines and Geology 1980.

Figure III-2 Stratigraphy of the Bull Mountains

Paleontological materials associated with the Fort Union Formation are not considered to contain high research potential (National Research Council 1987). The Fort Union Formation in the Bull Mountains area could be expected to contain some plant remains and mollusks but no paleontological localities have been documented.

C. TOPOGRAPHY

While the proposed life-of-mine area lies in mountainous terrain, the Huntley loadout is located in a relatively flat alluvial area adjacent to the Yellowstone River. The proposed rail spur corridor is located in mountainous terrain as it approaches the life-of-mine area but shifts to flat-to-rolling agricultural land as it terminates south of Broadview.

Elevations in the proposed life-of-mine area range between 3,700 and 4,750 feet above mean sea level. The average elevation in the vicinity of the proposed surface facility complex is about 3,900 feet above mean sea level. Topography of the area is characterized by gently sloping valleys bounded by ridges capped by frequent sandstone and clinker mesas. Surface slopes can reach as high as 15 percent in the area proposed for surface facilities and up to 45 percent in the vicinity of Dunn Mountain and other mesas and ridges.

Elevations in the vicinity of the proposed rail spur corridor range between about 3,700 and 4,200 feet above mean sea level. Higher elevations are experienced in the eastern end, about 5 miles from the proposed surface facility complex. Lowest elevations are encountered at the western end of the corridor, south of Broadview. Surface slopes in the vicinity of the corridor are similar to those in the life-of-mine area until the corridor exits the foothills near the Musselshell-Yellowstone county line. From this area through its southwesterly extent, the proposed corridor is characterized by flat-to-rolling agricultural land.

The powerline corridor, proposed for upgrade activities, follows Rehder and Halfbreed Creek drainages (see Figure III-3) and U.S. Highway 87 in a northerly direction towards Roundup. Powerline corridor elevations range from about 3,900 feet above mean sea level at its upper reaches, near the proposed surface facility complex, to about 3,300 feet in the vicinity of the Musselshell River. Grass-covered side drainages between hills provide a rolling character to the area.

The 6-acre Huntley loadout site is located on a flat alluvial area in Huntley, adjacent to the Burlington Northern railroad tracks. The area is adjacent to a grain elevator and has had previous surface disturbance.

D. SOILS

Detailed soils information has been compiled for the life-of-mine area, railroad and powerline corridors, and Huntley loadout. Mining and ancillary facilities would be located in Musselshell and Yellowstone counties and, while there is a published soils survey for Yellowstone County (Meshnick 1972), a survey has not been published for Musselshell County. Individual surveys were conducted for all proposed facilities and other mine-related disturbance areas in Musselshell County (Soil Conservation Service 1970-1989).

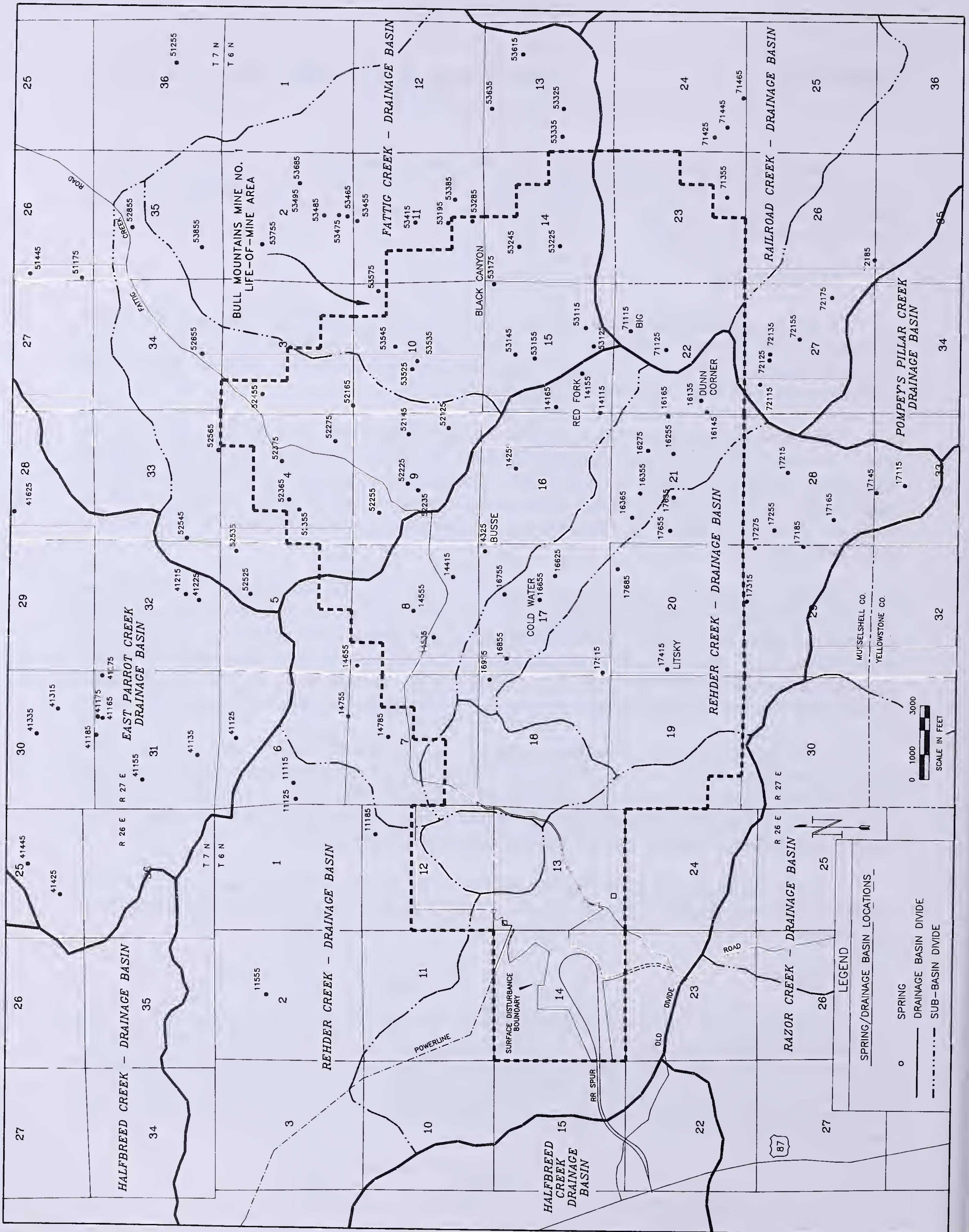

BULL MOUNTAINS MINE NO. 1 LIFE-OF-MINE AREA
FATTIG CREEK - DRAINAGE BASIN
RAILROAD CREEK - DRAINAGE BASIN
POMPEY'S PILLAR CREEK DRAINAGE BASIN
EAST PARROT CREEK DRAINAGE BASIN
REHDER CREEK - DRAINAGE BASIN
HALFBREED CREEK - DRAINAGE BASIN
HALFBREED CREEK DRAINAGE BASIN
RAZOR CREEK - DRAINAGE BASIN
BLACK CANYON
BIG
RED FORK
DUNN CORNER
BUSSE
COLD WATER
LITSKY
FATTIG CREEK ROAD
SURFACE DISTURBANCE BOUNDARY
POWERLINE
RR SPUR
OLD DIVIDE ROAD
MUSSELSHELL CO.
YELLOWSTONE CO.
T 7 N
T 6 N
R 27 E
R 26 E
87
0 1000 3000
SCALE IN FEET
N
LEGEND
SPRING/DRAINAGE BASIN LOCATIONS
○ SPRING
DRAINAGE BASIN DIVIDE
SUB-BASIN DIVIDE

Figure III-3 Spring/drainage basin locations

Soils in the planned surface disturbance areas of the proposed life-of-mine area are predominantly loams, silty loams, or sandy loams, with an occasional increase in fines to silty clay. Soils are shallower along upper slopes and fans, and deeper on lower terraces and drainage bottoms. The relatively shallow, upland Cabbart soils dominate the life-of-mine area with the Cabbart loam dominating the surface facility complex. These soils are well drained, have limited available water capacity and are easily eroded. Sandstone outcrops and clinker characterize plateaus and rims.

The proposed 33-mile railroad corridor is located in both Musselshell and Yellowstone counties. Thirteen mapping units characterize the corridor in Musselshell County with loams, clay loams, and silty clay loams being predominant. Mineral and salt deposits, steep slopes, and rock outcroppings that are frequent in the foothills become fewer as characteristics are tracked from the mine site towards the southwest, and the Yellowstone County line. From the Musselshell-Yellowstone county line, southwesterly to the railroad corridor's junction with the mainline south of Broadview, clays, silty clays, and clay loams become more predominant. Throughout the railroad corridor, soils have high erosion potential and range widely in their depth. In the vicinity of swales and basins, the clayey and wet soils pose the greatest construction limitations (e.g., high water tables at or within 36 inches of surface, erosion risk, high frost-action potential, and shrink-swell potential).

The 17-mile powerline corridor is located entirely within Musselshell County. Soils along the corridor vary with geology and topographic features, with shallow loams and rock outcrop inclusions on the slopes and rolling hills and deeper loams in valleys along drainages. The loams are generally well drained and have the potential to erode. Wet areas and ponds are encountered along the corridor within the loam soils. These areas appear to be human-made or -influenced and as such, soils features may not be consistent with natural soils in the area.

The Huntley loadout site is characterized by loam and silty clay loam soils. These are moderately deep, well-drained soils formed on alluvial river terraces. They have a high erodibility potential, good water-holding capacity, and are good topsoils.

There have been no soils of prime farmland quality identified in the areas proposed for Project activities.

E. HYDROLOGY

1. Surface Water Resources

General surface drainage from the Bull Mountains area is north toward the Musselshell River and south toward the Yellowstone River.

There are no perennial stream systems present within or immediately adjacent to the proposed life-of-mine area. The nearest perennial stream is the lower reach of Halfbreed Creek near its confluence with the Musselshell River, 18 miles to the north. Numerous ephemeral drainage basins that range in size from 10 to 10,000 acres discharge surface runoff. These ephemeral channels flow only in response to precipitation, however there are perennial ponds and stream reaches created by flow from springs.

Northerly drainage occurs through Rehder and Fattig creeks, while Pompey's Pillar and Railroad creeks provide drainage to the southeast (see Figure III-3).

The proposed corridor for the rail spur would neither cross nor be adjacent to any perennial stream system. Generally, the corridor is proposed for high areas where intersecting ephemeral channels drain small areas. The upper Goulding and Dean creeks provide northerly drainage while the upper Razor Creek system provides the only major drainage to the southeast along the proposed corridor. The powerline corridor proposed for upgrade activities follows the Rehder and Halfbreed Creek drainages from the proposed life-of-mine area to the Musselshell River. The corridor crosses the perennial Musselshell River and continues into Roundup to a substation. The Huntley loadout site is currently located in a disturbed area where surface drainage is directed to a lined sediment pond.

No designated alluvial valley floors (AVFs) are present within the proposed life-of-mine area or in areas proposed for associated activities. However, there are potential alluvial valley floors adjacent to the proposed life-of-mine area. By applying the draft "Alluvial Valley Floor Identification and Study Guidelines" (U.S. Department of the Interior 1983) portions of Rehder, Fattig, Railroad, East Parrot, West Parrot, Halfbreed, and Pompey's Pillar creeks have been identified as potential AVFs.

2. Ground Water Resources

In general, ground water flow in the Bull Mountains area is to the northwest, consistent with the plunging syncline (see Geology). Flow volumes are more dependable in deeper aquifers and less dependable in more shallow aquifers of the Tongue River formation. The shallow aquifers in which springs tend to be confined, are highly dependent on precipitation, infiltration, and percolation through various coal seams and sandstones. The capability of aquifers to transmit water (permeability) ranges from thousandths of feet to multiple-unit feet per day which makes flow rates highly variable. There are 4 wells currently installed in the area of the proposed surface facility complex. At depths of about 200 feet, they are planned to supply potable water to proposed mine operations (see Ancillary Facilities, Appendix A).

In the Bull Mountains Basin, 3 aquifer-bearing geologic formations overlie the deep impermeable shales of the Montana Group. From deep to shallow they are: the Fox Hills-Lower Hell Creek, Tullock, and Tongue River formations (see Figure III-2). In addition, alluvial sands and gravels serve as productive aquifers where they are thick and well developed. Deep carbonate rocks of the Madison Group are a major but little-used aquifer.

In the vicinity of the proposed mine, the aquifer of the Lower Hell Creek formation is about 400 feet thick. Yields are highly variable and range between 5 and 200 gallons per minute (gpm). The aquifer of the Tullock formation commonly produces 15 gpm. Aquifers of the Tongue River formation include sandstones that have produced as much as 160 gpm in isolated cases. In the Bull Mountains area, yields tend towards 1 to 30 gpm. While the coal seams of the Tongue River member are potentially good aquifers, the Mammoth coal seam in the vicinity of the proposed mine is not a high-yielding aquifer. Alluvial aquifers in the immediate vicinity of the proposed mine do not consistently yield adequate supplies of water as they are relatively thin and discontinuous. The alluvial gravels in the vicinity of the

Huntley loadout are sands and gravels mixed with cobbles that yield supplies of water adequate for most uses.

One hundred-thirty springs have been located in and around the proposed life-of-mine area (see Figure III-3 and Table E-2, Appendix E). Some of the springs have been enhanced through tank and pond installation and many discharge to nearby drainages. Springs vary widely in quantity of flow, and period or season of flow. The springs supply water for livestock and wildlife use and support vegetation and aquatic communities of varying size and composition. Fourteen of the 49 springs located within the proposed life-of-mine area (including Red Fork, Busse, Dunn Corner, Cold Water, Litsky and Big) can be considered to be of high importance from a hydrologic standpoint (see Table III-3). These springs generally exhibit higher rates of flow, higher quality, and year-long availability. Of the remaining springs in the life-of-mine area, 21 are of moderate importance, 13 are of low importance, and 1 is of negligible importance. The cumulative and relative scores of a spring are the result of the application of technical criteria and procedures presented in Appendix E. Equivalent quantitative data were not available for the ranking of all springs. Springs for which quantative data were limited were ranked using both data and estimates. The resulting scores do not reflect the importance of springs to ranchers, in all cases. A column has been added to Table III-3 to illustrate those springs (of the 49 scored) that were not ranked at the highest level of importance, but that are regarded as important springs by local ranchers. Ranchers emphasize use, location, and flow availability as the most important aspects of springs for livestock.

Many of the springs and seeps in and around the proposed life-of-mine area are strongly influenced by seasonal and periodic fluctuations in precipitation. Ground water flow to springs and seeps occurs as discharge from deep bedrock and from weathered shallow bedrock and alluvium. Precipitation infiltrates clinker and other recharge areas, percolates through fractured strata (bedrock) and shallow alluvium until a shale or impermeable layer interrupts flow, and discharges at springs along the impermeable barrier (see Figure III-4). Spring flow either recharges the downgradient alluvium or continues as surface flow (Meridian Minerals Company 1989-1992).

Ground water in the deeper overburden is partially confined in and below a thick sandstone unit above the Rock Mesa coal seam. The upper surface of this water zone averages about 100 feet above the Mammoth coal. Rock units below the Rock Mesa sandstone are generally saturated, though they are low yielding and have relatively poor aquifer potential.

The average quality of spring and ground water in the area is not generally suitable for public or private water supplies without treatment but is suitable for use by livestock and wildlife. However, many eastern Montana communities use water of this quality due to a lack of alternative sources. Specific electric conductance of the springs averages 1,561 micromhos/centimeter (cm), while sulfate oncentrations average 467 milligrams per liter (mg/l), and total dissolved solids in the water average 1,118 mg/l. The alluvial ground water has an average conductance of 1,625 micromhos/cm, an average sulfate concentration of 535 mg/l, and an average total dissolved solids concentration of 1,184 mg/l. Deeper overburden ground water averages 1,644 micromhos/cm, 457 mg/l, and 1,143 mg/l, respectively.

Three different evaluation systems support the ranking of the water quality as to its suitability for human drinking water or suitability for livestock, wildlife and agricultural uses, or both. They include:

TABLE III-3

Relative Importance of Springs in the Life-of-Mine Area

SPRING NAME/NUMBER	H[1]YDROLOGY	A[2]QUATICS	V[3]EGETATION	L[4]AND USE	W[5]ILDLIFE	C[6]UMULATIVE	R[7]ELATIVE SCORE	R[8]ANCHERS
Red Fork 14115	4	2	1	4	2	12	2	*
14155	3	2	2	2	3	18	2	*
14165	4	2	2	2	3	13	3	*
14255	4	3	4	3	3	18	4	
Busse 14325	4	4	1	4	4	20	4	
14415	3	3	3	3	3	15	3	
14535	2	1	2	1	1	7	1	
14555	2	2	1	3	3	11	2	
Dunn Corner 16135	4	2	1	2	2	11	2	*
16145	4	1	1	1	1	8	2	
16165	3	1	4	2	3	13	3	
16255	4	1	1	1	2	9	2	
16275	3	2	2	2	3	12	2	
16355	4	3	2	2	3	14	3	
16365	4	3	2	2	3	14	3	
16625	3	1	2	1	1	8	2	
Cold Water 16655	4	4	4	4	4	20	4	
16755	3	1	1	2	1	8	2	
16855	2	1	1	1	1	6	1	
16955	4	1	2	2	1	9	2	
Litsky 17415	4	4	4	4	4	20	4	

TABLE III-3 (Continued)

SPRING NAME/NUMBER	H[1]YDROLOGY	A[2]QUATICS	V[3]EGETATION	L[4]AND USE	W[5]ILDLIFE	C[6]UMULATIVE	R[7]ELATIVE SCORE	R[8]ANCHERS
17515	3	3	3	3	1	13	3	
17635	3	2	1	3	1	10	2	
17655	2	2	1	2	1	8	2	
17685	4	3	2	3	3	15	3	
52125	3	2	2	3	3	13	3	
52145	2	2	2	3	3	12	2	*
52165	3	2	3	3	4	15	3	*
52225	3	1	1	2	2	9	2	*
52235	2	1	1	2	2	8	2	
52255	2	1	1	2	1	7	1	
52275	2	2	2	2	4	12	2	
52355	2	1	2	2	2	9	2	
52365	1	1	1	1	2	6	1	
52375	2	2	2	3	3	12	2	
Dugout 52455	3	2	2	3	3	13	3	*
53115	4	1	1	2	1	9	2	
53125	3	1	1	2	1	8	2	
53145	3	1	2	2	2	10	2	
53155	3	1	2	1	2	9	2	
Black Canyon 53175	3	4	2	4	4	17	3	*
53225	2	1	1	2	2	8	2	
53245	3	2	1	2	4	12	2	
53285	3	3	2	3	3	14	3	*
53525	2	1	2	2	2	9	2	
53535	2	1	2	2	3	10	2	
53545	3	1	3	2	3	12	2	

TABLE III-3 (Continued)

SPRING NAME/NUMBER	H[1] HYDROLOGY	A[2] AQUATICS	V[3] VEGETATION	L[4] LAND USE	W[5] WILDLIFE	C[6] CUMULATIVE	R[7] RELATIVE SCORE	R[8] RANCHERS
Big 71115	4	2	1	3	1	11	2	*
71125	3	2	1	2	1	9	2	*

[1] See Table E-3-7, Appendix E
[2] See Table E-3-7, Appendix E
[3] See Table E-3-7, Appendix E
[4] See Table E-3-7, Appendix E
[5] See Table E-3-7, Appendix E
[6] **CUMULATIVE SCORE ÷ 5 = RELATIVE SCORE**
[7] 1 is lowest score, 4 is highest
[8] * indicates high importance to ranchers

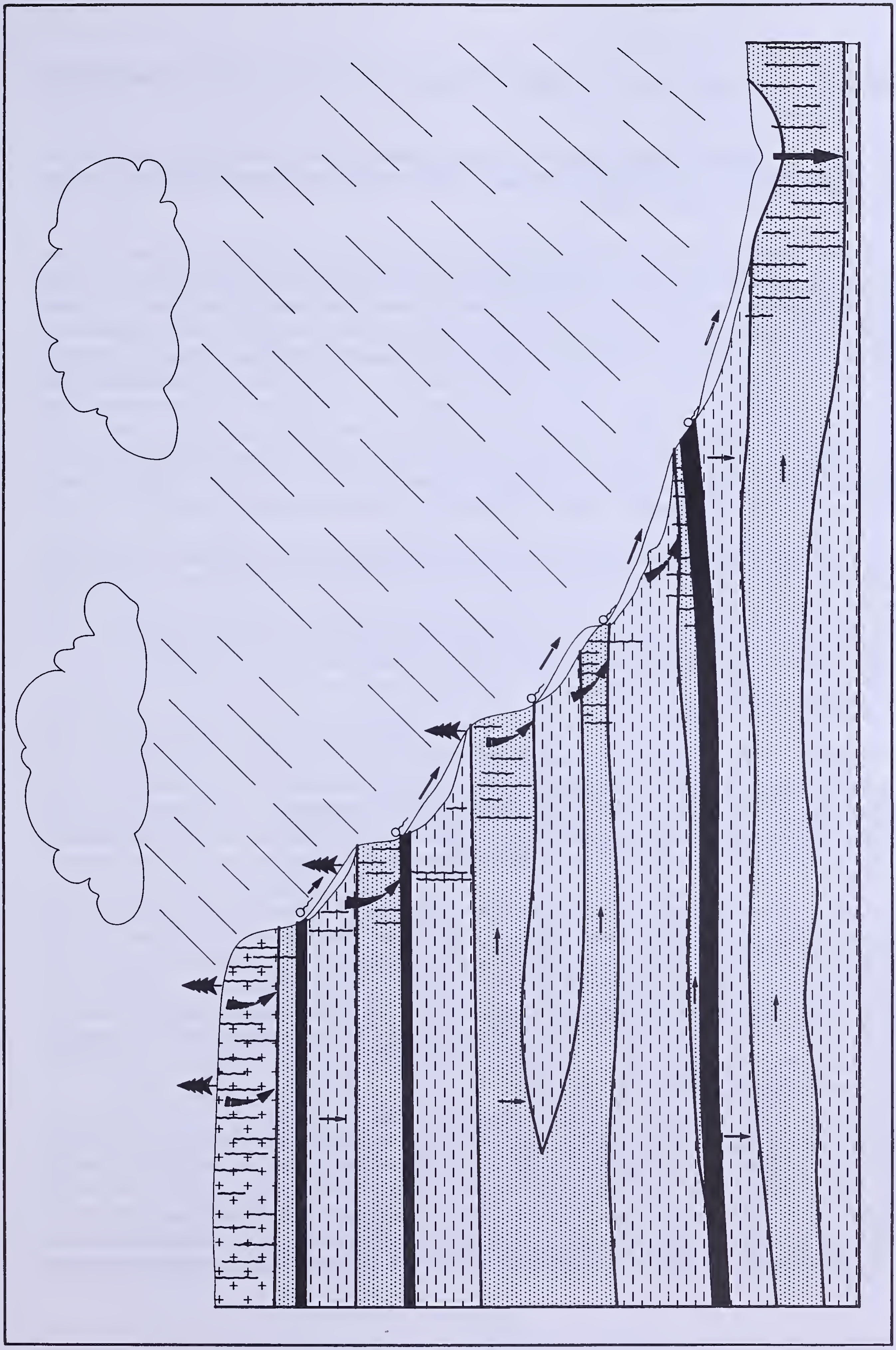

CLINKER
SANDSTONE
SHALE
COAL
DIRECTION OF GROUND WATER FLOW
SPRING

Figure III-4 Conceptual ground water model

National Secondary Drinking Water Standards, Montana Bureau of Mines and Geology publication of recommended limits derived from EPA and other agency recommendations recommended limits, and State of Montana Groundwater Classifications.

National regulations for water quality include the National Secondary Drinking Water Standards. These standards establish maximum recommended contaminant levels for human drinking water. The standard for sulfate in water is 250 mg/l and the standard for total dissolved solids is 500 mg/l. Average spring and ground water in the Bull Mountains area do not meet these standards. The Montana Bureau of Mines and Geology (Montana BMG) has published recommended permissible limits for inorganic constituents (minerals) in water. The Montana BMG publication recommends maximum contaminant concentrations (in mg/l) for drinking water, use by livestock, or for irrigation. Recommended sulfate is 250 mg/l for drinking and 1500 mg/l for livestock. Total dissolved solids recommendations are 500 mg/l for drinking and 5000 mg/l for livestock. Specific electrical conductance is recommended at a maximum of 1000 micromhos/cm for drinking water. Spring and ground water in the Bull Mountains area do not meet these recommended limits for drinking but are suitable for livestock use.

Ground waters are divided into 4 classes by the State of Montana (see Table E-2, Appendix E). The classes are determined by a range of specific electrical conductance. Specific electrical conductance depends on the concentration of ionized minerals in solution, or dissolved solids. Using the State of Montana classification, spring and ground water in the Bull Mountains area are Class II waters, suitable for wildlife and livestock use and marginally suitable for public and private water supplies.

F. VEGETATION

Vegetation of the Bull Mountains and surrounding area north of Billings is characteristic of the Eastern Sedimentary Plains of Montana in the 10 to 14-inch precipitation zone (Meridian Minerals Company 1989-1992; ECON INC. 1991). Topography varies from uplands, rock outcrops, and ravines forested with ponderosa pine and Rocky Mountain juniper at higher elevations, to adjoining sagebrush and mixed prairie grassland communities on benches, slopes, and drainages where soils are deeper.

Existing influences on local distribution of plant communities include soils, topography, surface disturbance, availability of water, management boundaries (fencelines), and a strong gradient in soil salinity from east-to-west. Grazing by livestock, fire suppression, and a large wildfire in 1984 substantially affected plant succession in the Bull Mountains area. The region has been disturbed by over a century of farming, mining and associated activities, road building, and residential development. Grassland or prairie vegetation types originally were extensive in the western part of the Bull Mountains area, but have been replaced largely by small grain production and more recently by Conservation Reserve Program (CRP) planting (see Land Use).

Eight broad vegetation communities plus the disturbed type exist in the Bull Mountains and surrounding area: silver sagebrush-mixed grassland; mixed grassland; ponderosa pine-mixed grassland; burned ponderosa pine-mixed grassland; improved pasture; agriculture; alkali/saltgrass; wetlands; and disturbed (ECON INC. 1991). (Vegetation types are described differently in the permit application, however these 8 types are included with those listed in the permit application.) These 8 broad types summarize 19 very complex vegetative communities including 6 grassland types, 6 shrub/grassland types, 6 ponderosa pine types, and 1 tame pasture type, all occurring on the life-of-mine area (Meridian Minerals Company 1989-1992). There are 26 vegetative communities in the railroad corridor (ECON INC. 1991).

The silver sagebrush-mixed grassland community occurs on lower valley slopes near drainages, especially where soils are deeper. Perennial grasses (western wheatgrass, blue grama, and Sandberg bluegrass) comprise somewhat over one-third of the canopy cover, with forbs providing 50 percent and shrubs and subshrubs about 14 percent of the canopy cover (see Table E-9, Appendix E). The silver sagebrush-mixed grassland has received considerable grazing pressure, favoring the less palatable species that predominate.

The mixed grassland community is interspersed with the ponderosa pine-mixed grassland community in the higher elevations on upland plateaus and benches with deeper soils. Due to this topographic positioning, it has received limited grazing, resulting in perennial grass dominance and relatively high forage production. In this community, western wheatgrass, needle-and-thread, green needlegrass, blue grama, and prairie junegrass typically account for over 60 percent of total vegetative cover and three-fourths of total production. Forbs account for 29 percent of cover and 18 percent of production.

The ponderosa pine-mixed grassland community generally occurs on moderate-to-steep upland slopes on shallow soils. Ponderosa pine is a minor component of the community canopy cover but is characteristic of the type. Fifty-two percent of canopy cover is provided by grasses, including bluebunch wheatgrass, western wheatgrass, and prairie junegrass, with forbs comprising about 41 percent of cover and one-third of the herbaceous production.

The burned ponderosa pine-mixed grassland community is a transitional community resulting from a wildfire in 1984. Grasses and forbs have proliferated in the post-fire community, while ponderosa pine reproduction is not evident. This burned community differs from ponderosa pine-mixed grassland and mixed grassland by the greater occurrence of crested wheatgrass, Japanese brome, cheatgrass, Kentucky bluegrass, and common dandelion as well as diverse shrub and forb components.

The improved pasture community consists of several cultivated areas planted to introduced grasses (crested and intermediate wheatgrass) and/or alfalfa. They are grazed and occasionally hayed.

The agriculture community consists of various grain farming and land in CRP. This community predominates in the area southwest of the Bull Mountains.

The alkali/saltgrass community occurs on saline/alkaline soils in lower basins southwest of the Bull Mountains. They are poorly drained and support simple communities of salt-tolerant species such as greasewood, foxtail barley, inland saltgrass, prickly lettuce, seepweed, and Nuttall's alkaligrass. Several noxious weed infestations are prevalent and appear to be actively spreading.

The wetland vegetation community accounts for less than 0.1 percent of the Bull Mountains and surrounding area communities but plays an important role in local ecosystems. Wetlands provide watering points for wildlife and livestock and provide habitat diversity. Species include several sedges, rushes, bulrush, cattail, western rose, and snowberry. They are associated at higher elevations primarily with springs, seeps, and intermittent streams, and at lower elevations with small, developed ponds and dams. Precipitation-dependent wetland sites fluctuate annually, in a range from dried out to wet, in direct response to seasonal moisture, temperature, and wind. There are 49 springs in the life-of-mine area, all of which are important to the vegetation communities they support. However, of the 49 springs in the life-of-mine area, 5, including Busse, Cold Water, and Litsky have a high degree of importance for vegetation (see Table III-3). Of the remaining springs, 4 have moderate importance, 21 have low importance and 19 have negligible importance to the overall life-of-mine area vegetation.

The disturbed type includes subdivision homesites, ranch and farm sites, industrial, commercial, roads, powerlines, and other manifestations of human use (Meridian Minerals Company 1989-1992; ECON INC. 1991a). The Huntley loadout is a commercial-use area originally created from river-bottom rangeland (see Appendix B).

G. WILDLIFE

Eight broad vegetation communities plus the disturbed type provide wildlife habitat in the Bull Mountains and surrounding area (see Vegetation). Vegetation communities are considered synonymous with wildlife habitat types in this section. Ponderosa pine-mixed grassland, and burned ponderosa pine communities are most common at higher elevations of the Bull Mountains, with mixed grassland and silver sagebrush-mixed grassland common at intermediate elevations. Mixed grassland; improved pasture; agriculture, including Conservation Reserve Program (CRP) lands; and alkali/saltgrass basins occur in the western, lower elevations. Very small acreages of the wetlands community may occur at all elevations. Of the 49 springs in the life-of-mine area, 8 springs, including Busse, Cold Water, Litsky, and Black Canyon are of high importance to wildlife. Sixteen are of moderate importance, 11 are of low importance, and 14 are of negligible importance (see Table III-3).

Mule deer are the most abundant and sought-after game species in the Bull Mountains and surrounding area, while white-tailed deer are seldom observed (Dusek 1978; Meridian Minerals Company 1989-1992; ECON INC. 1992a). Mule deer in the Bull Mountains are essentially nonmigratory, making modest seasonal movements caused by changes in forage conditions and weather. Deer can be observed using all vegetation communities throughout the area, both adjacent to areas of human activities and in more isolated areas during all seasons. In lower elevations, mule deer use agricultural lands heavily, particularly CRP fields where cover is much taller and denser than in grain or stubble fields. In the higher elevations, deer preference is for the ponderosa pine-mixed grassland vegetation community. During the winter, this community is used considerably more than would be indicated by its availability for thermal cover and food provided by the shrub component of the community. Winter observations indicate mule deer concentrated in 3 areas; the Rehder Creek drainage and across Fattig Creek Road north of the life-of-mine area, the east end of Elbow Hill, and along Fattig Creek at the north edge of the life-of-mine boundary. Use of the area west and south of the PM Mine increased as winter progressed.

A migratory herd of 92-100 elk use the Bull Mountains (Dusek 1978). Elk are the second-most numerous game animal and are distributed throughout the higher elevations, generally in areas away from human activity. Portions of Rehder, Parrot, and Fattig Creek drainages are used as summer range while

Railroad and Pompey's Pillar Creek drainages serve as winter range. Some winter use occurs on the south side of Dunn Mountain. In winter, elk or their evidence have been observed occasionally throughout the life-of-mine area including some use on the south side of Dunn Mountain. Elk tend to concentrate on south-facing or other slopes blown free of snow. Spring observations of cow/calf groups in the vicinity of Dunn mountain suggest the area could be used for calving.

The central Bull Mountains are marginal antelope habitat. Open habitat such as silver sagebrush-mixed grassland, mixed grassland, and agriculture communities in the eastern part of the area, are fragmented and interspersed with the ponderosa pine-mixed grassland community. Antelope distribution in the life-of-mine area is both seasonal and relatively dispersed, occurring in spring, summer, and early fall. No critical antelope habitat types have been identified, however, antelope use most major drainages in the life-of-mine area. It is unlikely that antelope would intensively use higher elevations due to lack of suitable habitat and cover, and human activity. The western portion of the area has regular antelope use of agricultural and CRP fields (Cole 1956; Cole and Wilkens 1958). In summer and particularly in winter, antelope tend to be concentrated in large herds in nearby Hay and Commanche basins.

Merriam's wild turkeys are year-round residents of the Bull Mountains area. Turkeys are not native, having been introduced into the Bull Mountains in 1958 and having since spread throughout the area. They are readily observed in the ponderosa pine-mixed grassland community (preferred habitat), and the agriculture community (Greene and Ellis 1971). The ponderosa pine-mixed grassland community provides roosting trees year-round, thermal cover during cold weather, and food during all seasons for wild turkeys (Jonas 1966).

Adaptable sharp-tailed grouse are also year-round residents of the Bull Mountains area but use somewhat differing vegetation communities on a seasonal basis. Grouse use silver sagebrush-mixed grassland and mixed grassland communities for courtship, nesting, and brood rearing in spring and summer, and use the other communities to some degree for food and cover during fall and winter. A dancing ground (lek) is located within the life-of-mine area. It is in a disturbed area (next to a road sign) along the PM Mine access road. In the proposed railroad corridor, a dancing ground is located immediately adjacent to the proposed rail line. Grouse have also been observed on a possible second dancing ground on a narrow ridge of mixed prairie type between agricultural and burned ponderosa pine communities along the rail corridor.

Non-native Gray partridge and ring-necked pheasant are not observed frequently, but are present in the western agricultural community (Weigand and Janson 1976; Weigand 1980). With about 50 percent of agricultural land converted to CRP, both species should benefit from increased undisturbed "permanent" cover and respond with an increase in numbers and area occupied (Weigand and Janson 1976; Weigand 1980).

Sage grouse are sagebrush-dependent, and their habitat is very limited in the Bull Mountains area, most of it having been converted to agriculture decades ago. A few individuals have been seen in the proposed railroad corridor. With the dependency this bird has on sagebrush, particularly in the winter (Eng and Schladweiler 1972), this area has little chance of supporting more than a remnant population.

Fourteen species of raptors have been observed within the Bull Mountains and surrounding area in all major habitat types. The greatest number of species was observed during the spring and fall migration. The rough-legged hawk (an arctic nesting species) is the most common winter raptor. Spring and summer residents (red-tailed hawk, kestrel, and great horned owl) comprise most of the breeding season observations. The red-tailed hawk and the kestrel are the most frequently observed species, though raptor densities are quite low. Golden eagles have been observed at all times of the year. Other raptors present include the prairie falcon, ferruginous hawk, Cooper's hawk, turkey vulture, northern harrier, sharp-shinned and Swainson's hawks, and short-eared and burrowing owls (ECON 1992a; Meridian Minerals Company 1989-1992). Many raptors undoubtedly nest in the general area, but only 3 red-tailed hawk nests and a great horned owl nest have been found in the life-of-mine area. Turkey vultures, red-tailed hawks, kestrels, prairie falcons, and great horned owls are expected to nest in the western Bull Mountains areas, using cliff nests located in cavities or ledges of sandstone outcrops. Cliff-nesting sites are quite well-distributed in association with the ponderosa pine-mixed grassland and burned ponderosa pine-mixed grassland communities (Harrison 1979). Other raptors use trees, snags and hillsides for nesting. Suitable nesting habitat is abundant for raptors in the Bull Mountains and surrounding area. The bald eagle migrates through the area in spring and fall (Swenson et al. 1981). There have been 4 sightings of wintering bald eagles.

Seventy-three other bird species are known to inhabit higher elevations of the Bull Mountains, using 5 vegetation communities: ponderosa pine-mixed grassland community; burned ponderosa pine-mixed grassland community; mixed-grassland community; silver sagebrush-mixed grassland community; and the agricultural community (Meridian Minerals Company 1989-1992). The burned ponderosa pine-mixed grassland community provides an extraordinary abundance of snags as nesting habitat for cavity-nesting small birds such as woodpeckers, swallows, bluebirds, and wrens (Scott et al. 1977; Scott and Oldemeyer 1983; ECON INC. 1992a).

Ninety-six species of birds are known to use the lower, western portions of the Bull Mountains area, including 11 waterfowl species and 15 species associated with wetlands (see Table 10, Appendix E), (Skaar, Flath, and Thompson 1985; ECON INC. 1992b). Forty-five species of birds have been observed in the vicinity of wetland areas in the life-of-mine area (Meridian Minerals Company 1989-1992).

Several wildlife species belonging to such diverse groups as mammalian predators, aquatic birds, amphibians, and reptiles, can be observed within the Bull Mountains area. The coyote is common throughout the area. Other species include Nuttall's cottontail, Richardson's ground squirrel, black-tailed prairie dog, and least chipmunk.

Aquatic habitat in the area includes streams, ponds, springs, seeps, and areas associated with the wetland community. The Rehder, Fattig, and Railroad Creek drainages are ephemeral; however, there are perennial ponds and stream reaches created by flow from springs. Approximately 15 acres of wetland habitat occurs in the life-of-mine area, of which 3 acres are open water. A number of wet sites remain relatively undisturbed by current land use practices, however, many aquatic sites have been modified by livestock grazing or development of livestock watering facilities. Additional disturbances to the aquatic environment of the area include the 1984 fire and subsequent loss of insulating cover, and increases in siltation from runoff and cattle disturbance. All animals found in the mine plan area use the streams, ponds, and springs, and related habitat to a greater or lesser degree.

Water birds and shorebirds use pond, spring, and stream areas. Other birds occupy riparian zones and/or harvest insects that emerge from wet areas. The aquatic invertebrate community is characterized by low-to-moderate species diversity, densities, and productivity. Species are predominantly those typical of standing water, however, a number of the taxa represented are found only in lotic (flowing water) habitats. The dominant invertebrate species are generally tolerant of widely varying conditions and are typically transient in nature or bottom dwellers that prefer standing water. Species from the midge (Chironomidae), mayfly (Ephemeroptera) and fly (Diptera) families dominate the invertebrate community, with aquatic earthworms (Oligochaeta) and amphipods also well represented. The periphyton communities (e.g., algae, bacteria, and protozoa) present in the springs, ponds, and streams are not common in eastern Montana, and indicate a higher water quality than is usually encountered in this part of the State (Dr. Loren Bahls, Department of Health and Environmental Sciences, personal communication, March 25, 1992). Of the 49 springs in the life-of-mine area, 4 springs, Busse, Cold Water, Litsky, and Black Canyon, are of high importance to aquatic organisms. Seven springs are of moderate importance, 17 are of low importance, and 21 are of negligible importance to aquatic organisms.

The primary aquatic/semiaquatic vertebrate species associated with the wetland community include the tiger salamander, chorus frog, and northern leopard frog. Painted turtles and an unidentified toad have also been observed. No fish species have been found in any of the ponds or stream reaches.

H. TRANSPORTATION

1. Transportation

Musselshell and Yellowstone counties are served by an extensive network of Federal, State and County roadways. Public bus transportation is available in the area from Intermountain Transportation Company. Public airports are located in Billings and near Roundup. Freight rail service is available in Broadview and Huntley.

2. Roadway Network

Fattig Creek Road is a 2-lane, improved, all-weather roadway that extends from Old Divide Road, northeast through the proposed mine area, to U.S. Highway 12. Old Divide Road is a 7-mile, 2-lane paved road that parallels U.S. Highway 87, starting and ending at intersections on U.S. Highway 87 (see Figure I-2). Both Fattig Creek and Old Divide roads are maintained by Musselshell County. In the area traversed by the proposed rail spur there are a number of roads. In Musselshell County, the County-maintained roads are Goulding Creek Road, Bailey Road, and the western end of Majerus Road. (Norma Wegmann, Musselshell County, personal communication, August 4, 1992). In Yellowstone County, the major roads are 21 Mile, Frey, Van Sky, and Oswald roads. (Suzette Summers, Yellowstone County, personal communication, August 4, 1992.) The named roads are County-maintained, all weather, gravel roads except for a paved section of 21 Mile Road east of Broadview.

U.S. Highway 87 and Montana Route 3 are Federal-aid Primary System (FAP), 2-lane paved roads maintained by the Montana Department of Transportation (MDT). U.S. Highway 87 extends from Billings, north through Roundup and Grassrange then northwest toward Great Falls. It travels through mostly level and rolling terrain with some steep grades and limited sight distance on some hills. Montana Route 3 extends from Billings, northwest through Acton and Broadview, ending just north of Lavina at a junction with U.S. Highway 12. Montana Route 3 is generally level terrain south of Broadview.

Highway 312 is a 2-lane paved road (4 lanes approaching the U.S. 87 intersection) maintained by MDT. Until it was replaced by Interstate 90, Highway 312 was part of the FAP System and served as the principal east/west arterial highway to Billings. Heath Street and Northern Avenue are 2-lane paved roads in Huntley, maintained by Yellowstone County. Heath Street serves both residential and industrial land uses in east Huntley.

MDT, through its pavement management system, evaluates the overall condition of State-maintained roadways every 2 years. This evaluation, used to identify potential highway improvements, includes pavement conditions (travel surface and structure), safety and traffic capacity.

MDT has several highway reconstruction projects planned along U.S. Highway 87 and Montana Route 3 (see Appendix B). These projects include pavement and shoulder widening, and strengthening and repaving of the travel surfaces. Along U.S. Highway 87, several segments have poor overall conditions. These segments are located about 7 miles north of Highway 312 and extending to about 1 mile south of the southern Old Divide/U.S. Highway 87 intersection. Along Montana Route 3, a section starting at the Yellowstone-Golden Valley county line and extending south to near the Billings city limits has poor overall conditions. Highway 312 has good overall pavement condition starting from U.S. Highway 87/Highway 312 intersection extending east through Huntley (John Wright, Montana Department of Transportation, personal communication, January 27, 1992).

3. Intersections

Three intersections of interest in connection with the proposed Project are the 2 U.S. Highway 87 intersections with Old Divide Road and the U.S. Highway 87 intersection with Highway 312.

Neither the northern nor southern Old Divide Road/U.S. Highway 87 intersections are controlled by traffic lights. Adequate line-of-sight distance is available at both intersections. Due to a curve on U.S. Highway 87, there is slightly greater sight distance at the northern intersection. (Donald P. Dusek, Montana Department of Transportation, personal communication, May 31, 1991). The major difference between the intersections is the vertical grade of U.S. Highway 87. Vehicles turning left (south) from the northern Old Divide Road/U.S. Highway 87 intersection onto U.S. Highway 87 may be delayed in accelerating to highway speed by a 4 percent upgrade for about 3,400 feet. Vehicles turning left (south) from the southern Old Divide Road/U.S. Highway 87 intersection onto U.S. Highway 87 encounter a 1.33 percent downgrade, and are aided in accelerating to normal travel speeds (Donald Dusek, personal communication, May 31, 1991).

Although the U.S. Highway 87/Highway 312 intersection has no standard traffic signal light control, (it only has flashing yellow and red lights), it meets the minimum vehicular requirements for standard signals, as established by the Manual on Uniform Traffic Control Devices (Federal Highway Administration 1990). (Donald W. Cromer, Montana Department of Transportation, personal communication, November 18, 1991).

The northbound and southbound approaches of the U.S. Highway 87/Highway 312 intersection are controlled by stop signs supplemented by flashing red light. Both approaches consist of 2 lanes; a shared left-turn/through lane and a right-turn lane. The eastbound and westbound approaches are controlled only by flashing yellow light. These 2 approaches consist of 4 lanes; a left-turn lane, 2 through lanes and a right-turn lane. There is adequate sight distance on all of the intersection approaches. Vertical grades of all of the approaches are level, and do not affect vehicle operation through the intersection. Southbound to eastbound left-turns and westbound to northbound right turns are difficult for large trucks because the turns are greater than 90 degrees. Truck tires tend to ride up onto the curb or track off the pavement onto the shoulder when making the westbound to northbound right turn. As a result, trucks make this turn slower than other vehicles (Donald Dusek, personal communication, May 31, 1991).

4. Existing Traffic

The current Average Daily Traffic (ADT) for Fattig Creek Road is about 15 vehicles. Along Old Divide Road, the ADT is about 40 vehicles (Sandy Haugsdal, Musselshell County, personal communication, January 24, 1992). The ADT on U.S. Highway 87 varies from 2,570 vehicles, near the Highway 312 intersection, to 1,560 vehicles, north of the northern Old Divide Road intersection. Truck and heavy vehicle traffic accounts for about 10 percent of the total traffic volume traveling on U.S. Highway 87 (Donald Cromer, personal communication, November 18, 1991).

ADT on Highway 312 varies from 7,000 vehicles at the U.S. Highway 87 intersection, to about 2,400 vehicles east of Huntley. The percentage of truck and heavy vehicle traffic varies from about 9 percent at the U.S. Highway 87 intersection to about 5 percent near Huntley (Donald Cromer, personal communication, November 18, 1991).

The ADT on Montana Route 3 varies from about 1,200 vehicles, north of Acton, to about 1,100 vehicles near the Musselshell-Yellowstone county line. (Donald Cromer, personal communication, November 18, 1991).

No ADT figures are available for County roads along the rail spur route. It is estimated that the ADT is about 5 to 15 vehicles per day.

5. School Bus Routes

Five school systems operate buses in the area; the Roundup Public School District, Shepherd School District, Pioneer School District (in Billings), Billings School District, and Huntley Project Schools. Peak hours of bus activity on Highway 312, from U.S. Highway 87 through Huntley, and U.S. Highway 87 from Highway 312 to Roundup are from 6:45 to 8:15 a.m. and 3:10 to 4:45 p.m.. Limited bus traffic occurs on Highway 312 starting at 2:00 p.m. on Wednesdays. On U.S. 87 there is limited bus traffic starting at 2:20 p.m. on all school days.

The Independent School is located just north of the U.S. Highway 87/Highway 312 intersection and has an at-grade pedestrian crossing of U.S. Highway 87. Peak pedestrian and local service traffic (picking up and dropping off children) occurs from 7:00 to 8:00 a.m. and 3:30 to 4:30 p.m.

6. Capacity

Capacity is generally defined as the ability of a facility to accommodate vehicles or persons over a defined time period, given prevailing roadway and traffic control conditions. Levels-of-Service (LOS) is used to qualitatively describe the operational conditions within a traffic stream, and the perception by motorists and/or passengers. The 6 levels associated with LOS are designated as "A" through "F." LOS "A" represents free flow conditions while LOS "F" represents a disruption or breakdown of traffic flow (Transportation Research Board 1985).

The current LOS on Fattig Creek and Old Divide roads is "A." The LOS of the Fattig Creek Road/Old Divide Road intersection and both northern and southern Old Divide Road/U.S. Highway 87 intersections is "A" at all times. Vehicles can turn onto or from U.S. Highway 87 with little or no delay.

The current LOS for U.S. Highway 87 range from "A" to "D." Upon completion of the planned reconstruction projects, the LOS will range from "A" to "C." Traffic flow is generally stable and acceptable along U.S. Highway 87 (Donald Cromer, personal communication, November 18, 1991).

There is congestion at the U.S. Highway 87/Highway 312 intersection during peak travel periods. Vehicles turning left from the northbound and southbound approaches experience delays moving through the intersection. The LOS of the northbound and southbound approaches is "E" during both the a.m. and p.m. peak travel periods (Donald Cromer, personal communication, November 18, 1991).

The LOS on Highway 312 varies from "B" near Huntley to "D" near the U.S. Highway 87 intersection (Donald Cromer, personal communication, November 18, 1991). There is stable and acceptable flow from Huntley to west of the U.S. Highway 87 intersection. Near here flows become more congested and less stable when traffic increases on Highway 312.

The current LOS on Montana Route 3 south of Broadview is "B." There is stable and acceptable flow along this segment of Montana Route 3.

7. Accident History

MDT keeps records on the number and severity of all accidents on State-maintained roadways. Accident rates are expressed in accidents per million vehicle-miles. MDT also computes an accident severity rate for State-maintained roadways. This is defined as the ratio of fatal, injury, and property damage accidents to the total number of accidents on a roadway. The expression of the number and severity of accidents as rates allows direct comparison of the relative safety of State-maintained roadways.

The accident rate on U.S. Highway 87 is 1.19. This is lower than the 1.72 statewide average for an FAP roadway. The severity rate of accidents along U.S. Highway 87 is 1.78, and is greater than the 1.53 statewide average FAP severity rate (Donald Cromer, personal communication, November 18, 1991). This means there are fewer accidents per million vehicle-miles on U.S. Highway 87 compared to the statewide average for other FAP roadways, but the accidents are more severe.

The accident rate on Highway 312 of 1.74, is greater than that for an FAP roadway but less than the 2.10 rate for a Federal Aid Secondary (FAS) roadway. The severity rate of 1.50 for Highway 312 is less than the rate for both FAP and FAS roadways (Donald Cromer, personal communication, November 18, 1991). In this case, there are more accidents per million vehicle-miles on Highway 312 compared to the statewide average of FAP roadways, but fewer accidents per million vehicle-miles when compared to the statewide average for FAS roadways. Accidents occurring along Highway 312, are generally less severe than those on other FAP and FAS roadways within the State. Along Montana Route 3, the accident rate of 1.12 and severity rate of 1.59 are both lower than the FAP statewide average (Hank Butzlaff, Montana Department of Transportation, personal communication, January 24, 1992).

I. NOISE

1. Introduction

Noise can be characterized as unwanted, unpleasant sound. It can cause hearing losses, interfere with speech communication and the performance of complex tasks, and disturb sleep. Noise may be either intermittent or continuous, steady or impulsive. It can result from a broad range of sources and frequencies blending together or from one specific sound. The human response to noise is diverse and varies with the type of noise, time of day, and sensitivity of the individual.

Noise, as a physical phenomenon, refers to sound pressure variations audible to the ear. Sound pressures audible to the human ear typically range in amplitude from 2×10^{-5} to 200 Pascals, (i.e., a range of 10^7 or 10,000,000). A logarithmic unit known as the decibel (dB) was borrowed from electrical engineering to represent sound level. The dB is a dimensionless unit related to the logarithm of the ratio of the measured level to a reference level.

The ear is not equally sensitive at all frequencies of sound. At low frequencies, characterized as a rumble or roar, the ear is not very sensitive while at higher frequencies, characterized as a screech or a whine, the ear is most sensitive. The dBA was developed to measure and report sound levels in a manner more closely approaching how people perceive sound. Figure III-5 presents typical dBA levels for various sources in outdoor rural and urban environments and common indoor noise levels.

A change in sound level of 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness. This is true for loud and soft sounds. For example, a gas lawn mower at 100 feet would be about twice as loud as heavy traffic at 300 feet (see Figure III-5). Noisy urban daytime sounds would be perceived as being about four times as loud as heavy traffic at 300 feet.

A "metric" used in environmental noise analysis refers to the unit or quantity that measures or represents the effect of noise on people. The metric called the day-night average sound level (DNL) has been adopted by the U.S. Environmental Protection Agency (EPA) as the rating method used to describe community noise. DNL is the 24-hour energy average, A-weighted sound level with a 10 dB weighing

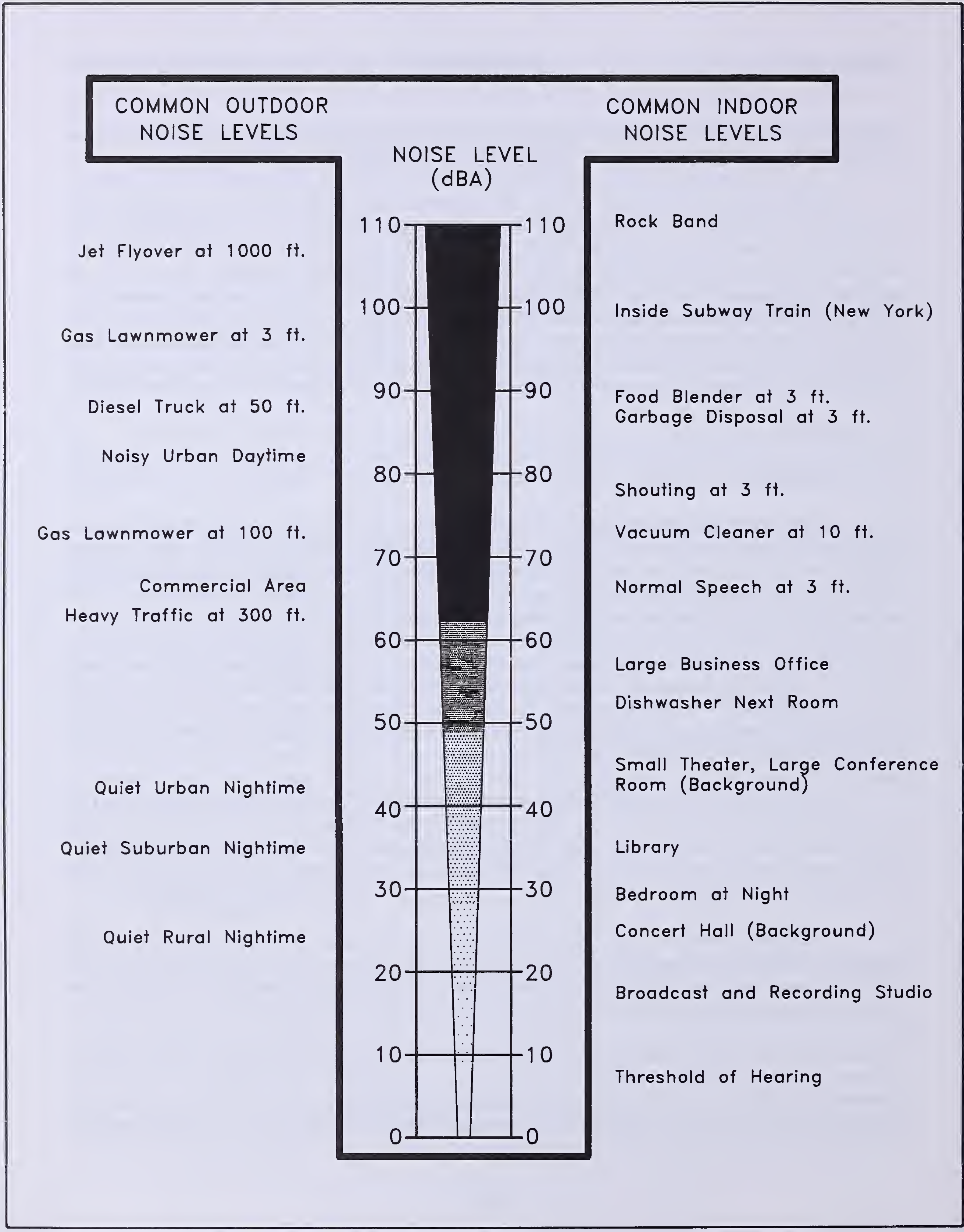


Figure III-5 Comparative noise levels

added to those levels occurring between 10 p.m. and 7 a.m. This penalty is added to account for the fact that noise at night is judged more annoying than the same noise during the day. The expression L_{dn} is used in this report to designate day-night average sound levels.

EPA has identified a range of yearly day-night sound levels sufficient to protect public health and welfare from the effects of environmental noise (U.S. Environmental Protection Agency 1974). Outdoor yearly levels on the L_{dn} scale are sufficient to protect public health and welfare if they do not exceed 55 dBA in sensitive areas (residences, schools, and hospitals). Inside buildings, yearly levels on the L_{dn} scale are sufficient to protect public health and welfare if they do not exceed 45 dBA. Maintaining an L_{dn} noise level of 55 dBA outdoors should ensure adequate protection for indoor living. Because these protective levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, EPA has indicated that they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is not reason to suspect that the general population will be at risk from any of the identified effects of noise.

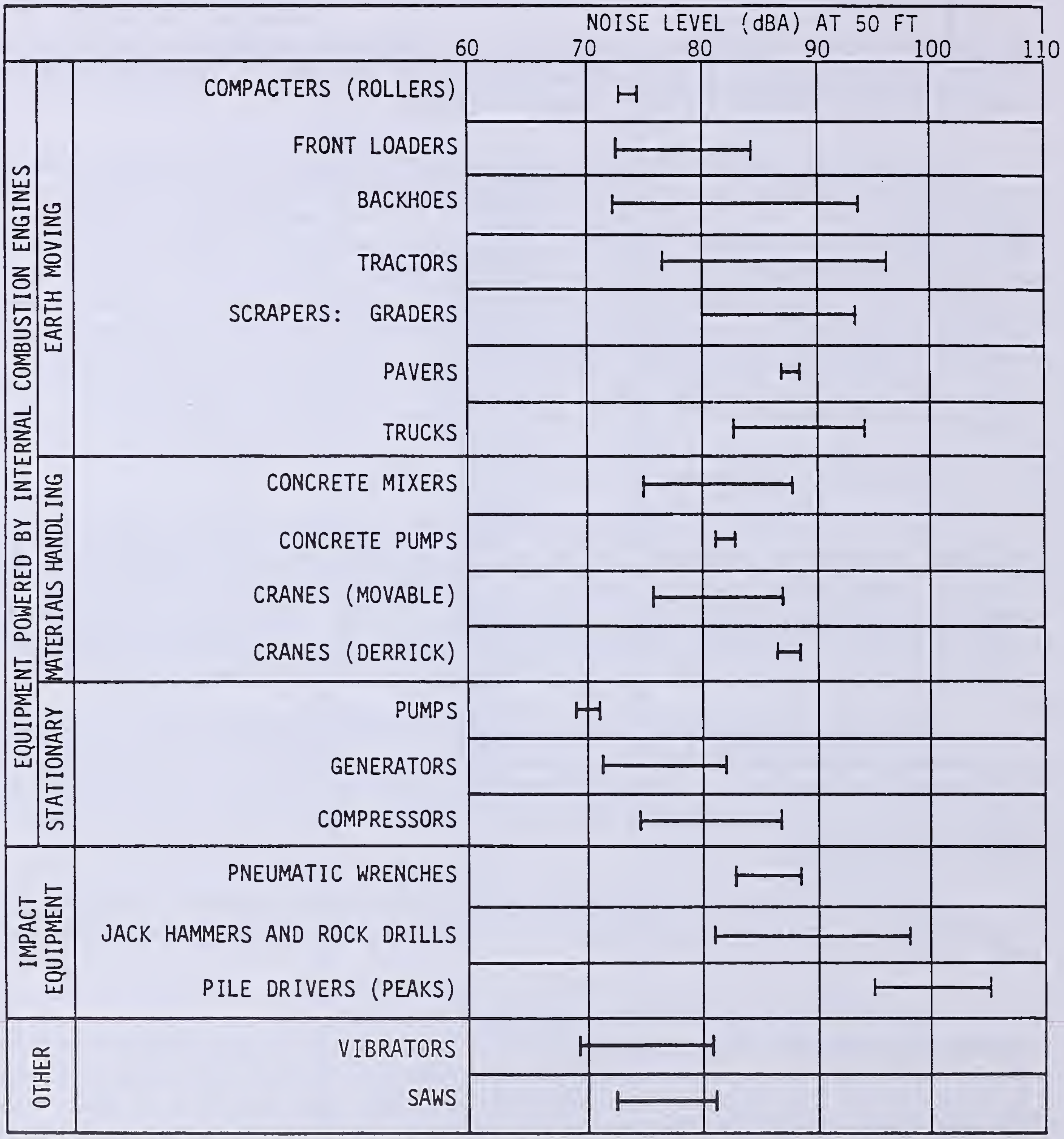
2. Existing Noise Environment

Current noise levels in and around the proposed mine area are from activities conducted at the PM Mine. Construction equipment, back-up alarms, wash-plant operations, vehicular traffic, and occasional blasting are the major noise sources. Construction equipment noise levels should currently range from about 72 to 95 dBA near the preparation facility to an ambient level of 40 dBA about 4,500 feet from the PM Mine area. During the night, when the PM Mine is not operating, ambient noise levels should be about 35 to 40 dBA. Typical construction noise levels are shown in Figure III-6.

Current noise levels along the proposed rail spur are from farm machinery and occasional traffic on rural roads. Because there are no major noise sources, L_{dn} noise levels of 35 dBA, typical of rural areas, should exist along the proposed right-of-way. When farm machinery and occasional traffic are present, noise levels may reach as high as 75 to 95 dBA at 50 feet and should drop to about 55 to 58 dBA 1,000 feet from sources.

Existing noise levels along the proposed coal-hauling route are principally due to vehicular traffic. L_{dn} values 100 feet from the edge of the road are about 59 dBA on both U.S. Highway 87 and Highway 312.

Existing noise levels in Huntley are primarily from vehicular traffic on Northern Avenue and Heath Street. Noise levels have not been measured in this area but can be approximated from traffic levels on these roads. During October, sugar beet truck traffic is the dominant noise source in the area. L_{dn} levels 100 feet from Northern Avenue and Heath Street may range from 50 to 55 dBA. From November through January, when beets are hauled to the factory, beet-truck traffic is less, and L_{dn} values would be about 45 to 50 dBA. During the remaining months of the year, traffic is greatly reduced and L_{dn} levels should range from 40 to 45 dBA.



Note: Based on Limited Available Data Samples.

Source: EPA 1971.

Figure III-6 Construction equipment noise ranges

J. SOCIOECONOMICS

1. Employment, Personal Income, and Population

In 1989, employment in Musselshell County totalled 1,850 and was dominated by farm-related jobs; 20 percent of all employment in the County was farm-related (see Table E-12, Appendix E). Secondary employment, consisting primarily of jobs in retail trade, services, and government sectors, totalled 50 percent of all jobs in the County. Total employment in Musselshell County declined by 94 jobs between 1980 and 1989. Most of the decrease occurred in the mining sector (162 jobs lost) and the retail trade sector (33 jobs lost). During this same period, the number of jobs increased slightly in the transportation and utilities industry, while the services industrial sector realized an increase of 118 jobs.

Historically, Yellowstone County has served as a commercial trade center for southeastern Montana and, consequently, most jobs in the County have been related to the retail trade and service sectors (see Table E-12, Appendix E). In 1989, farm employment in Yellowstone County comprised 2 percent of total jobs; less than either the Musselshell County or statewide percentages. Since 1980, employment in Yellowstone County has increased 14 percent; however, most gains in employment have been in the lower paying secondary jobs (services and retail trade), while the number of higher paying jobs in mining, construction, manufacturing, and transportation has decreased.

Unemployment in Musselshell County has declined from a high of 10.6 percent in 1986 to the present level of 7.8 percent (see Table E-13, Appendix E). The decline occurred because of the decrease in the available labor force and the absence of any new employment opportunities. In the past, the unemployment rate in Musselshell County has been 1 or 2 percent higher than the statewide rate, except in the late-1970s and early-1980s when oil field activity was peaking. In Yellowstone County, unemployment has been lower than the statewide rate since 1980, and stood at 4.8 percent in 1990.

Total personal income and earnings by industrial sector for the State of Montana, and Musselshell and Yellowstone counties are detailed in Table E-14, Appendix E. In 1989, earnings totalled $29.3 million in Musselshell County and were dominated by earnings from farm, transportation and utilities, services, and government jobs. Earnings from mining activities, including oil and gas exploration, have declined from 15 percent of total personal income in 1980 to the present level of 4.5 percent. During this same period, farm earnings increased from $1.7 million to $5.5 million. In Yellowstone County, the major source of earnings was the services sector, with slightly over 20 percent of total personal income attributed to this secondary industry.

Between 1980 and 1990, the population of Musselshell County decreased by 322 people or about 7.3 percent (see Table E-15, Appendix E). Most of the population loss in Musselshell County occurred in Roundup; population declined from 2,116 in 1980 to 1,808 in 1990. Population changes in Yellowstone County have closely paralleled statewide changes since 1970. The population of Yellowstone County increased from 108,035 in 1980 to 113,419 in 1990; however, this small increase represented an actual net out-migration over the 10-year period.

Projections of population and economic characteristics for the area indicate growth rates similar to those experienced between 1970 and 1990 (see Table E-16, Appendix E). Over the 20-year projection period, the population of Musselshell County, without consideration for the proposed Project, is expected to grow at an annual rate of 0.5 percent to 4,615 people (National Planning Association Data Services, Inc. 1991). This projected growth is nearly identical to the 1970-90 population growth rate for the County. By the year 2010, employment in Musselshell County is projected to increase by about 10 percent to a level of 2,052 jobs. Both employment and population growth rates of Musselshell County are representative of a stable economy with little or no economic expansion projected. Similarly, the outlook for Yellowstone County is reflective of little or no growth over the next 20 years. The population of Yellowstone County is projected to grow from 113,419 in 1990 to 134,968 by 2010, representing an approximate annual growth rate of 0.9 percent. Employment is projected to grow at an annual rate of 1.4 percent, from 70,279 in 1990 to 92,981 by 2010.

2. Public Sector Fiscal Conditions

Property taxes are the most important source of funding for Musselshell County and annually account for nearly two-thirds of all revenues. In Montana, property taxes are based on the taxable valuation of a county and, in fiscal year (FY) 1992, Musselshell County had a total taxable valuation of $6.8 million (Montana Department of Commerce 1991). In FY 1992, Musselshell County adopted an annual budget of about $1.5 million, including $817,301 for general fund purposes. In FY 1992, the city of Roundup had a taxable valuation of $1.5 million and an annual general fund budget of about $349,410. Property taxes account for nearly two-thirds of Roundup's revenues.

In FY 1992, Yellowstone County, which provides services for the communities of Huntley and Shepherd, adopted a total budget of $39.9 million including about $9.9 million for general fund purposes (Montana Department of Commerce 1991). About one-half of the budget is funded by property taxes based on a total taxable valuation of $184.4 million. In FY 1992, Billings, the County seat of Yellowstone County, adopted a total budget of $55.4 million. The total budget included projected general fund expenditures of $44.0 million, based on a total taxable valuation of about $106.0 million. About one-third of this total budget is funded through property taxes. During the same fiscal period, the town of Broadview had an annual general fund budget of $9,974 based on a taxable valuation of $139,304.

Maintenance and construction budgets for Highway 312, U.S. Highway 87, and Montana Route 3 are the responsibility of the MDT. Musselshell County has fiscal responsibility for Old Divide Road while Yellowstone County maintains streets in Huntley. The primary source of revenue for maintaining State highways is the State fuel tax and gross vehicle weight (GVW) tax. Construction of State highways also is funded by State fuel taxes; however, matching Federal funds account for about 67 percent of all highway construction in Montana. Traditionally, Montana has received approximately 2 dollars in Federal-aid highway funds for every dollar of Federal fuel tax collected in the State (Montana Department of Transportation 1991).

Average annual maintenance costs for 1989-91 were $126,620 for U.S. Highway 87, $38,654 for Highway 312, and $175,320 for Montana Route 3 (Tim Morris, Montana Department of Transportation, personal communication, March 18, 1992). The MDT does not attempt to justify whether or not traffic, and related fuel and GVW tax on any roadway in Montana, support the cost of maintenance or reconstruction. Furthermore, local governments do not track maintenance costs of roadways by location, therefore operation and maintenance costs are not available for Old Divide Road or Heath Street in Huntley.

Local governments in Montana levy an assessment against property-taxable valuation to fund maintenance and construction of roadways. For FY 1992, Musselshell County levied 18.158 mills to raise $93,340 for operation and maintenance of County roads. That amount combined with $114,800 of local government severance tax from oil and gas, and $131,330 of non-tax revenue, provided a total Fiscal Year 1992 road fund budget of $339,470 (Sanford Haugsdal, Road Superintendent for Musselshell County, September 24, 1992).

General fund expenditures for area school districts usually account for about two-thirds of the school budget. Nearly all general fund-related revenues are realized through property taxation. In attempting to equalize school budgets throughout the State, the 1988 legislature shifted the funding of general fund budgets from local districts to State and County equalization. At present, it is the goal of the legislature to finance about 80 percent of all school district general fund expenditures through equalization.

In FY 1992, general fund budgets per elementary student enrolled varied from $2,690 at Shepherd to $12,350 at Broadview (Office of Public Instruction 1991). General fund monies spent per elementary school student were about $3,093 in Roundup Elementary School District, $3,210 in Billings, and $2,985 Huntley. At the high school level, general fund budgets varied from $3,779 per student in Billings to $6,914 per student in Broadview. Roundup School District budgeted $4,404 per high school student in general funds, while Shepherd School District expected to spend $4,545 per high school student. In this same time period, Huntley School District projected that it needed $4,620 in general fund monies per high school student. In FY 1992, the statewide average general fund expenditures per student were $3,058 for elementary students and $6,200 for high school students.

3. Public Water Supply, Wastewater Treatment, and Solid Waste

Municipal water for Roundup residents is obtained from 2 sources. The primary water source originates in an abandoned coal mine on the south side of the Musselshell River and is supplemented by water from the Musselshell River. Water is stored in 2 concrete reservoirs with a combined capacity of 3 million gallons. The water supply, pumping capability, and storage capacity of the Roundup municipal water system are adequate for present population. The Roundup municipal wastewater treatment facility consists of a 2-cell lagoon system. The system is well maintained, in adequate condition, and underutilized.

The Broadview community water supply is served by 2 wells with a combined capacity of 92 gpm (Jerry Burns, Montana Department of Health and Environmental Sciences, personal communication, July 2, 1992). Water is stored in a 21,000-gallon tank. The water system is in good condition and is adequate to accommodate some new households and businesses. The 2-cell lagoon wastewater system in Broadview is in good condition and could serve a larger population (Jerry Burns, personal communication, July 2, 1992).

Huntley receives its public water from a well and stores the water in a 18,000-gallon tank. The capacity of the Huntley water system is low for the population served, and the community probably should install a second well to provide a backup water source (Jerry Burns, personal communication, July 2, 1992). Individual septic tank systems are used by Huntley residents for wastewater disposal.

Solid waste collection and disposal in Musselshell County are provided by the Musselshell County Refuse District. Refuse is picked up and hauled to the Roundup transfer station where it then is hauled by a private contractor to the Billings landfill for disposal. The transfer station operation is functioning below capacity. Solid waste in Yellowstone County is collected and disposed of in the Billings landfill which, with no recycling, has adequate capacity until year 2045 (Jim Flisrand, Billings Solid Waste Collection and Disposal, personal communication, June 30, 1992).

4. Law Enforcement and Fire Protection

Law enforcement in the area is provided by the Montana Highway Patrol, Musselshell and Yellowstone County Sheriff's departments, and Billings Police Department. The Highway Patrol concentrates on traffic patrol and traffic-related incidents, whereas the sheriff's departments focus on criminal activity in Musselshell and Yellowstone counties. There are an adequate number of highway patrol officers to serve the Billings area; however, the Roundup area needs more officers (Captain Craig Reap, Montana Highway Patrol, personal communication, June 30, 1992; Captain Don Seyfert, Montana Highway Patrol, personal communication, June 30, 1992).

The Musselshell County Sheriff's Department, a consolidated city (Roundup)/County agency, provides law enforcement services for an estimated population of 4,100. Additional officers are needed to provide adequate protection for Musselshell County residents (Sheriff Paul Smith, Musselshell County Sheriff's Department, personal communication, June 30, 1992). The 14-bed County jail, located in Roundup, is an antiquated facility that needs to be either renovated or replaced.

The Yellowstone County Sheriff's Department provides law enforcement for an estimated population of 113,419 including the unincorporated communities of Huntley and Shepherd. More officers are needed for this area (Captain Richard Brennan, Yellowstone County Sheriff's Department, personal communication, June 30, 1992).

The Billings Police Department provides law enforcement services to an estimated population of 81,000. The department is understaffed and needs more officers to provide adequate law enforcement services to the city (Captain John Hall, Billings Police Department, personal communication, June 30, 1992).

All fire departments in the study area, except for Billings, are volunteer organizations. The Musselshell County Rural and Roundup Fire Department has an adequate number of volunteers and firefighting equipment for existing demand (Duane Brewer, Musselshell County/Roundup Fire Department, personal communication, July 1, 1992).

The Bull Mountains Volunteers, an initial-attack firefighting unit in Musselshell County, was organized in 1988 to provide additional fire protection in the Bull Mountains area. Although there are enough volunteers, firefighting equipment is limited.

The Broadview and Shepherd Volunteer Fire departments have sufficient volunteers and equipment to serve the existing population (Robby Badgett, Broadview Volunteer Fire Department, personal communication, July 7, 1992; Laura Vanberg, Shepherd Volunteer Fire Department, personal communication, July 1, 1992).

The Huntley Fire Department has 4 to 5 volunteers--not enough to provide sufficient fire protection to the community (Steve Erb, Huntley Volunteer Fire Department, personal communication, July 7, 1992). Huntley's firefighting vehicles and equipment are limited and in poor condition. In addition, the fire department is not properly equipped to provide year-round fire protection and volunteers are not trained to fight structural fires. Huntley and Worden fire departments share an emergency telephone number and maintain a mutual aid agreement (Yellowstone County Planning Department 1991).

Billings has 6 fire stations to provide fire protection to various areas of the city, but, in general, not to the rural areas surrounding Billings. Billings Fire Station #6 would respond to fires or provide equipment in Shepherd since they maintain a mutual aid agreement with the Shepherd Fire Department and all Billings fire stations would respond to wildland fires if requested by Montana DSL (Lonnie Larson, Billings Fire Department, personal communication, June 30, 1992).

5. Ambulance Services

The Musselshell County Ambulance Service in Roundup provides on-the-ground ambulance service to an estimated population of 4,100 and responds to an average of 25 emergency calls a month. The Musselshell County Ambulance Service is staffed by an adequate number of volunteers. The ambulances are high-mileage vehicles and probably should be replaced (Marion Ferguson, Musselshell County Ambulance Service, personal communication, June 30, 1992).

Broadview, Shepherd, and Huntley have no ambulance service available other than Billings. There are 3 on-the-ground ambulance and 2 air ambulance services in Billings, a sufficient number to provide appropriate emergency care to Billings and the surrounding area.

Worden provides ambulance service to the entire Huntley Project area, including the community of Huntley. Shepherd has a Quick Response Unit which provides immediate first aid until an ambulance arrives at the scene (James Kraft, Yellowstone County Disaster and Emergency Services, personal communication, October 19, 1992).

6. Housing

Year-round housing units in Musselshell County, including the Bull Mountains area, increased 9 percent between 1980 and 1990, from 1,997 to 2,183. Although the number of occupied units remained stable through the 10-year period, vacant housing units increased by 75 percent, from 299 to 522. Rental vacancy rate was 20 percent in 1990 (U.S. Department of Commerce 1991).

In 1990, there were 1,006 year-round housing units in Roundup, with 78 percent occupied (U.S. Department of Commerce 1991). Three-quarters of the homes were classified as one-unit structures and 80 percent were valued at less than $50,000.

Similar to Musselshell County, year-round housing units in Yellowstone County increased between 1980 and 1990 from 42,689 to 48,781, with vacant housing units increasing by 46 percent. Rental vacancy rate was 10 percent in 1990 (U.S. Department of Commerce 1991). In Billings, year-round housing units increased by 28 percent, with a 62 percent increase in vacant housing units.

The Billings Multiple Listing Service, which provides a listing of homes within a 70-mile radius of Billings, had 519 residential listings as of June 22, 1992, of which an estimated 45 were outside of Billings (Sue Anders, Billings Multiple Listing Service, personal communication, June 30, 1992). The Billings housing market has been very active and fewer homes are on the market than during the last few years (Charles Yegen, Peter Yegen Jr., Inc., personal communication, July 1, 1992; Jacque Stannebein, Landmark Realtors, personal communication, July 2, 1992; Sue Anders, personal communication, June 30, 1992).

Rental units in the Billings area are expensive and difficult to locate. When apartments or houses become available, they are rented almost immediately (Charles Yegen, personal communication July 1, 1992; Jacque Stannebein, personal communication, July 2, 1992).

Billings has a large supply of mobile home spaces (3,026 licensed mobile home and 353 recreational vehicle (RV) or tent spaces), while the smaller communities of Roundup (67 mobile home and 3 RV spaces), Broadview (12 mobile home spaces), Shepherd (6 mobile home spaces), and Huntley (14 mobile home spaces) have a limited supply (Montana Department of Health and Environmental Sciences 1992).

Billings has many motels to provide temporary housing (2,679 licensed motel/hotel rooms), whereas Roundup and Broadview have few (54 and 6 rooms, respectively) (Montana Department of Health and Environmental Sciences 1992).

7. Educational Facilities

Public schools in the Yellowstone County area include Broadview, Shepherd, Huntley Project (located in Worden), and Billings. Roundup School District is in Musselshell County. Broadview School District is situated in 3 counties--Yellowstone, Musselshell, and Stillwater.

Roundup School District maintains 2 school buildings--Central Elementary School (kindergarten through grade 6) and Roundup Middle/High School (grades 7 through 12). Roundup school enrollment has remained fairly stable since 1988, decreasing from 709 students in 1988 to 689 students in 1991. Based on current enrollment figures and new accreditation standards to become effective July 1, 1992, the elementary school is at capacity; however, seventh and eighth grade classes could accommodate 25 additional students and high school classes could enroll 20 more students before reaching capacity (Superintendent Jay Erdie, Roundup School District, personal communication, July 1, 1992).

Broadview School District maintains 1 school building serving students in kindergarten through grade 12. School enrollment of Broadview School District has fluctuated little between 1988 and 1991. School enrollment in 1991 was 70 students in kindergarten through grade 8 and 40 in grades 9 through 12. Overcrowded conditions currently exist at Broadview School (Superintendent Dan Nelsen, Broadview School District, personal communication, July 1, 1992).

Shepherd School District has 4 school buildings serving students in kindergarten through grade 12. School enrollment increased 7 percent between 1988 and 1991. During this period, enrollment in the lower level grades increased, while enrollment in the high school decreased. Shepherd Elementary Grade School is crowded even though a vacated cafe next to the school was purchased and converted into classroom space, and the high school will near capacity within 2 years (Superintendent Calvin Spangler, Shepherd School District, personal communication, July 2, 1992).

Huntley Project School District maintains 3 school facilities in Worden--an elementary school (kindergarten through grade 6), a middle school (grades 7 and 8), and a high school (grades 9 through 12). School enrollment decreased 5 percent between 1988 and 1991, from 698 to 662 students. The elementary grade school is filled to capacity, but the upper level grades could accommodate increased enrollment even though there has been a recent increase in seventh and eight grade enrollment (Ramona Stout, Huntley Project School, personal communication, July 1, 1992).

Billings School District #2 consists of 24 elementary schools, 4 middle schools, and 3 high schools. Between 1988 and 1991, school enrollment remained fairly stable. In school year 1991, there were 10,854 students in kindergarten through grade 8 and 4,723 in grades 9 through 12.

8. Human Services and Health Care Facilities

State, Federal, and County funding support social welfare services in Musselshell County. The County-administered welfare program provides Aid to Families with Dependent Children, Food Stamps, County Assistance (general and medical), and Medicaid. Caseloads in the Roundup office have increased dramatically over the past couple years, growing to a higher average level than formerly experienced during peak caseload months (January, December, and February). The current number of staff is not adequate to dispense the required services in a timely manner (Boni Braunbeck, Musselshell County Human Services, personal communication, June 30, 1992).

Two general practitioners, 1 dentist, and 1 optometrist provide health care services in Roundup. Roundup Memorial Hospital is the only licensed hospital within Musselshell County. Two physicians from Roundup and 12 physicians from Billings have doctors' privileges to provide health care services at the hospital (Max Long, Roundup Memorial Hospital, personal communication, June 30, 1992). In 1991, the 17-bed hospital had an occupancy rate of 7.5 percent (Gary Rose, Montana Department of Health and Environmental Sciences, personal communication, June 29, 1992).

Musselshell County Mental Health Center and Musselshell Chemical Dependency Center share an office in Roundup. The Mental Health Center provides counseling to the chronically mentally ill. The Musselshell Chemical Dependency Center provides out-patient counseling, referrals for in-patient care, and mandatory classes to driving-under-the-influence offenders.

No licensed physicians have health practices in Broadview, Shepherd, or Huntley. Billings has 308 licensed physicians employed in a variety of medical practices (Carol Norling, Montana Department of Commerce, Professional and Occupational Licensing Bureau, personal communication, June 30, 1992).

There are 2 hospitals in Billings--Deaconess Medical Center and Saint Vincent Hospital and Health Center. The 280-bed Deaconess Medical Center had an occupancy rate of 64.5 percent in 1991, while St. Vincent Hospital, also a 280-bed facility, had an occupancy rate of 71.0 percent in 1991 (Gary Rose, personal communication, June 29, 1992). The Billings area also has a number of businesses providing mental health and chemical dependency counseling.

9. Social Well-being

The social and economic character of Roundup and the surrounding area has evolved in conjunction with ranching, coal mining, and oil production. These have been the dominant sources of employment and income for Roundup area residents. Historically, the Roundup area economy has followed a "boom/bust" pattern, starting with the cattle industry in the 1880s and extending through the coal mining and oil development periods. Many area residents' social values, perceptions, and lifestyles have been influenced by the cyclic nature of good economic times followed by economic recession.

The ways in which people identify and respond to one another in Roundup are typical of small western towns--informal and personal. Residents know almost everyone in town and are aware of individuals' character, occupation, and socioeconomic status. The small town atmosphere, the quiet and predictable pace of life, and mutually supportive networks of family and friends are valued by residents.

In recent years, the Bull Mountains area has experienced an influx of people seeking the seclusion, scenery, and relatively pristine natural surroundings of the area. Many Roundup residents have termed these newcomers "mini-farmers" because they have purchased small acreages and have small numbers of livestock. It is perceived by Roundup residents that Bull Mountains residents are becoming somewhat of a social, political, and economic influence because they are organizing to reflect their specific interests, such as the Bull Mountains Landowners Association and Bull Mountains Volunteers.

The effects of proposed mine development on the social life of Roundup and Bull Mountains residents are apparent within the area. Some people have become polarized based upon their support or opposition to the Project. Roundup residents tend to favor new coal development, whereas the ranchers and Bull Mountains "mini-farmers" are perceived by Roundup residents to oppose it, even though the majority of Bull Mountains residents reported in a survey that they were not opposed to the mine. Social interaction between the "pro" and "anti" factions has become strained because of the relatively high degree of emotion associated with coal development (Economic Consultants Northwest 1989).

Broadview, the smallest incorporated town in Yellowstone County, evolved as an agricultural community and railroad loading site for agricultural and livestock commodities. Local lifestyles are influenced by factors that affect agricultural productivity and economics, such as amount of rainfall and market prices. As with most rural Montana communities, the agricultural lifestyle fosters strong ties between the people and the land (Montana Department of Natural Resources and Conservation July 1974).

Agriculture tends to produce its own subculture--work is physically hard, economically risky, and few times of the year can an operation be left to fend for itself. Broadview residents describe factors they like most about the area as being the quiet and small town environment, wildlife, open spaces, sparse population, and clean, fresh air.

Passage of the Carey Land Act in 1894 led to the development of extensive irrigation projects in the Shepherd/Huntley area, with settlers moving in to farm the land. The Huntley area was not developed until after 1904 because the area south of the Yellowstone River was part of the Crow Indian Reservation. Early homesteaders brought a diversity of cultures from Europe and Scandinavia and have contributed to the ethnic history of the area.

Social life throughout the Shepherd/Huntley area is typical of rural and small town areas of Montana. Farming and ranching families, many descendants of original settlers, provide a dominant social influence. Lifestyles and patterns of social interaction reflect traditional values and are characterized by strong interpersonal bonds based on shared ideas, trust, tradition, and community activities.

Area residents value the quiet, rural environment with open spaces, clean air, and a diversity of wildlife. Although people in the area value independence and low population density, extensive social interchanges are important elements of their lifestyles.

According to some local residents, past use of the existing Montana Rail Link low-volume coal loadout facility in Huntley (see Appendix B) has impacted the community. For a few months in 1990, coal was hauled from the proposed mine area to the Huntley loadout. In a recent survey (Economic Consultants Northwest 1991), 92 percent of the respondents indicated that they were aware that coal was hauled to the loadout facility and 43 percent of these respondents said they were affected by the Project. Coal dust, noise, safety of children due to increased traffic, highway deterioration, and the intrusion of the Project into residents' daily lives were concerns identified by the respondents as a result of the operation of the loadout facility in 1990. Since that time a group of Huntley residents has organized a subcommittee of the Huntley Community Club to oppose the Project.

Seasonally, trucks haul sugar beets to a stockpile facility in Huntley (see Appendix B). Residents generally have not voiced concerns about the hauling of sugar beets similar to those expressed about the proposed coal truck traffic.

K. RECREATION

Within Roundup and the immediate vicinity, outdoor recreation facilities include a 9-hole golf course, tennis courts, swimming pools, baseball fields, a community center (gymnasium), a large campground with over 50 sites, and a community park. Visitor use at the campground averages 3 sites per night but the campground fills to capacity for short periods during summer when special events draw visitors to town (Gayna Smiedala, Roundup Chamber of Commerce, personal communication, January 30, 1992). Golf course use averages 800-950 non-members and 200-225 members, annually. Use is light to moderate except for occasional weekends (Monty Sealy, Roundup Chamber of Commerce, personal communication, March 4, 1992).

The majority of Roundup and Bull Mountains residents participate in dispersed outdoor recreation activities including hunting, fishing, camping, walking, and horseback riding. Some of these activities take place in the Bull Mountains. However, most land in the Bull Mountains is privately owned, providing limited access for recreational pursuits.

Sections of Federal (BLM) land are generally isolated from each other by privately-owned lands. No federally-managed campgrounds or parks are located in this area of the Bull Mountains.

Deer harvest records indicate that hunting activities in the Bull Mountains area (Hunting District 590) have steadily increased over the past 5 years (Montana Department of Fish, Wildlife and Parks n.d.). In 1991, 4,134 deer hunters alone generated 16,521 hunter days of recreation in the hunting district. Elk and antelope hunting is also available to a limited extent but hunting is controlled by an established permit system. In 1991, 130 elk hunters generated 871 hunter days. In 1991, 762 turkey hunters in Musselshell County generated 2,235 hunter days. Big game hunting season opens about the middle of October and runs through Thanksgiving weekend. There are both spring and fall seasons for turkey hunting.

Fishing pressure is generally very light along the Musselshell River where most fishing occurs. Private stock ponds also provide fishing opportunities to a limited degree (Jay Newell, Department of Fish, Wildlife and Parks, personal communication, March 6,1992).

A total of 450 acres have been developed into 78 parks in Billings. An additional 918 acres are yet to be developed into 4 parks outside the city limits (Gene Blackwell, Billings Recreation Division, personal communication, January 30, 1992). Yellowstone County has developed an additional 53.9 acres into 74 parks (Cumin Associates 1984).

Huntley operates and maintains a 6-acre community park. Development within this park includes playground equipment, a basketball court, baseball diamond, and picnic facilities. Dispersed activities occurring in the community involve walking, jogging, and bicycling. Many residents of Huntley are retired and participate in these activities on a daily basis (Jim Pope, Vice President of the Huntley Community Club, personal communication, January 30, 1992).

L. LAND USE

According to County comprehensive plans, about 1 percent of the land in Musselshell County and about 3 percent of the land in Yellowstone County is urban or urban built-up area. The remaining land is primarily agricultural, including rangeland, forest areas (forest cover and commercial forest), cropland, and pastures. There are also limited areas of rural/suburban tracts. Very little of the land area of either county is currently mined. Land in the Bull Mountains Project area is primarily forest and cropland, with some rangeland and rural/suburban tracts.

Land uses of the proposed life-of-mine area, rail spur, and transmission line include rangeland, cropland, coal mining, timber production, wildlife habitat, and recreation. Table III-4 provides a breakdown of existing land uses for the proposed life-of-mine area. The proposed Huntley loadout would be located in an existing rail-serviced industrial area.

1. Mineral Resource Development

PM Mine is currently permitted to mine coal in the western portion of the proposed life-of-mine area. Appendix B provides a full description of the PM Mine. Adjacent to the southeast is the reclaimed Meridian test pit area (see Figure B-1, Appendix B). The PM Mine and Meridian coal test pit cover about 202 acres of land, or 1.9 percent of the total life-of-mine area. About 71 acres of this land are currently used for livestock grazing.

2. Public Utilities

The only utility lines in the proposed life-of-mine area are those that serve the few scattered residences, ranches, and the PM Mine. There are no major transmission or pipelines in the proposed life-of-mine area.

The proposed 69 kV Fergus Electric Company power transmission line, planned to serve the proposed mine, can be divided into 2 sections. The first is a 10-mile upgrade from the Montana Power Company substation at Roundup, south to the South Roundup substation. The second is a 7-mile extension from the South Roundup substation south and east to the proposed mine (see Figure I-2). The first section is located in an existing easement that generally parallels U.S. Highway 87. The second section follows U.S. Highway 87 south for 2 miles then traverses a combination of agricultural, timberland, and grasslands to the mine area.

There are 2 oil and gas pipelines that cross the proposed rail spur right-of-way from northwest to southeast. The first is located about 8 miles east and the other 16 miles east of the west terminus of the rail spur. The first easement is owned by Continental Pipeline Company and the second by Glacier Pipeline Company.

One power transmission line tower, owned by Montana Power Company, is located adjacent to the rail spur about 4 miles east of its west terminus. From this point, the transmission line runs eastward along the rail spur's south right-of-way line for about 2 miles.

TABLE III-4

Bull Mountains Mine No. 1 Life-of-Mine Area
Land Use Acreages

	ACREAGE OCCUPIED	PERCENT OF TOTAL AREA
1. Residential/fish and wildlife habitat/ recreation	438	4.0
2. Cropland/grazing land	17	0.2

Table III-4 (continued)

	ACREAGE OCCUPIED	PERCENT OF TOTAL AREA
3. Grazing land/fish and wildlife habitat/ recreation	9,944	91.6
4. Special-use pasture/fish and wildlife habitat/recreation	262	2.4
5. Grazing land/fish and wildlife habitat/ industrial/commercial	50	0.5
6. Special-use pasture/fish and wildlife habitat/industrial/commercial	21	0.2
7. Industrial/commercial	109	1.0
8. Developed water resources	15	0.1
	10,856	100.0

Source: Meridian Minerals Company 1989-1992.

3. Livestock Grazing/Agricultural Land

Approximately 10,294 acres, 94.8 percent of the life-of-mine area, are used for livestock grazing, mainly cattle and some horses. About 17 of these acres, north of the PM mine, are primarily used to grow alfalfa or wheat and are used secondarily as grazing land. Although there are no areas set aside solely for use as wildlife habitat, 10,715 acres of the life-of-mine area do provide wildlife habitat (see Table III-4). There are a total of 49 springs in the life-of-mine area. Four of these, Busse, Cold Water, Litsky, and Black Canyon are highly important to livestock grazing and wildlife, 14 are moderately important, 24 have a low importance, and 7 have a negligible importance (see Table III-3).

The proposed rail spur traverses a variety of agricultural uses. About 10 and one-fourth miles of the east end is primarily grazing land with ponderosa pine cover. The remaining right-of-way is primarily fields of small grains, hay, wheatgrass lowlands, alkali/salt grasslands, and conservation reserve lands. Conservation Reserve lands are lands that have temporarily been set aside under the Federal Conservation Reserve Program (CRP). The CRP is in effect to help owners and operators of eligible cropland conserve and improve soil and water resources by removing highly erodible or other eligible cropland from production. The CRP also curbs the production of surplus commodities, thereby increasing commodity prices received by farmers, improving water quality by reducing soil erosion, reducing sedimentation in streams and along roadsides, and enhancing fish and wildlife habitat. The owner and/or operator of the land is compensated for keeping the land out of production for the term of the agreement.

4. Other Land Uses

A portion of a dispersed housing subdivision, about 438 acres, is located in the north portion of the life-of-mine area. The subdivision is being developed by Yellowstone Basin Properties, Inc. About one-third of the available parcels have been sold; however, only 1 house has been built to date. There are several scattered, rural residences within one-half of the proposed 69 kV transmission line and the life-of-mine area. The proposed rail spur right-of-way would come within 300 to 400 feet of 2 ranch houses, and within one-fourth to one-half mile of several others.

The proposed Huntley loadout would be located in a rail-served industrial area in the southeast portion of Huntley (see Figure B-2). A sugar beet loading facility, rail yard, and grain elevator are immediately adjacent to the proposed loadout site. There are residential areas to the northeast, north, and northwest of the proposed site. The closest residence is within 500 feet of the site. To the west, within 1,000 feet of the proposed loadout, is the urban area of Huntley. Detailed descriptions of existing facilities and operations are in Appendix B.

M. VISUAL RESOURCES/AESTHETICS

The Bull Mountains area is characterized by wooded rolling hills and low mountains (the highest is Dunn Mountain with an elevation of about 4,750 feet) and open, flat, grass- and farmlands. In general, the region is a mix that combines areas with some outstanding visual features and some that are fairly common to the region. There are some areas of extensive cultural modifications including Roundup and Broadview, the PM Mine, Meridian's coal test pit and agricultural fields.

The proposed life-of-mine area is composed of hills and low mountains, interspersed by gently sloping valleys, with some upland grasslands, hayfields, ponderosa pine and rock outcroppings. There is a mixture of outstanding visual features, some that are common to the region, and some extensive modifications. The PM Mine has disturbed about 101 acres. The Snowy, Big Horn, Pryor, Beartooth, and Crazy mountains are visible from Dunn Mountain, the highest point of the Bull Mountains (over 1 mile south of the Musselshell-Yellowstone county line). The Crazy and Beartooth mountains are about 100 miles distant.

The proposed 33-mile rail spur runs from the proposed mine, on the east end, in a generally southwesterly direction to the Burlington Northern mainline, about 2 miles south of Broadview. A 6,800-foot siding would parallel the mainline south of its junction with the rail spur. The rail spur right-of-way varies from 150- to 500-feet wide and traverses land ranging from wooded hills and grassy valleys with some small, steep-sided canyons on the east end, to flat, open fields and lowlands on the west end. The east end is a mix of some outstanding visual features with some common to the region, while the west end is composed of features that are subtle, with little contrast, and common to the region.

The proposed transmission line would include 10 miles of upgraded line located in an existing easement that runs from Roundup, south to the Roundup substation, and 7 miles of newly-constructed line in a 50-foot right-of-way running south and east from the Roundup substation to the proposed mine. The line would travel through rolling hills and valleys with mixed pine and grasslands.

The Huntley loadout is located at an existing rail-served industrial area in the southeast corner of Huntley, adjacent to a sugar beet stockpile and loading area, grain elevator, and the Montana Rail Link tracks. There are residential areas to the northeast, north and northwest; the closest residence is about 500 feet from the proposed facility. The scenic quality of this area has been substantially impacted by cultural modifications.

All of the proposed facilities are located in areas whose visual/aesthetic features are a mix of some outstanding and some common features and areas whose features are fairly common to their physiographic region. There are no areas of special, critical, or unique scenic significance, and no national landmark sites on any of the proposed mine facility sites.

N. CULTURAL RESOURCES

1. Prehistoric and Historic Resources

Prehistoric resources are physical properties resulting from human activities predating written records, identified as either isolated artifacts or sites. Sites contain concentrations of artifacts (e.g., stone tools and ceramic shards), features (e.g., campfires and tipi rings), and plant and animal remains. Depending on their age, complexity, integrity, and relationship to one another, sites may be important and capable of yielding information about past cultures and settlement patterns. Prehistoric site types in the Bull Mountains area include campsites, cribbed log structures, limited activity sites, rock art, rock cairns and quarries, and workshops.

Historic resources consist of physical properties that postdate the existence of written records and include architectural structures (e.g., log cabins, dams, and bridges) and archaeological features such as foundations, trails, and trash dumps. Such resources may have research potential in the same manner as prehistoric sites, but historic sites are more often considered important because of their association with important historical persons or events, or as examples of distinctive architectural styles.

The active disturbance area, including the facilities area, haul roads, and the railway corridor, was surveyed at a high-intensity (Class III) level. The balance of the life-of-mine area was surveyed for rock art and standing structures since controlled subsidence should not materially disrupt subsurface materials. Steep slope areas where subsidence could disrupt subsurface deposits have been identified. These will be surveyed at the Class III level in advance of mining and any new sites evaluated and mitigated as required.

Thirteen sites (10 lithic scatters, a homestead, a stone circle site and a prehistoric/historic site) have been found in the proposed life-of-mine area (Rood 1990; Tetra Tech, Inc. 1991). Five prehistoric lithic scatters and the stone circle site were recommended as potentially National Register of Historic Places (NRHP) eligible pending additional testing (Rood 1990; Tetra Tech, Inc. 1991). Seven sites have limited research potential and are not considered eligible for the NRHP.

Several additional sites have been located throughout the life-of-mine area but have not been fully recorded or evaluated for NRHP eligibility. Other undiscovered sites doubtless occur within the life-of-mine area. Some of these will probably prove to be NRHP eligible. Areas with the highest probability for prehistoric and historic sites would be near springs, or along ridge tops with southern or eastern exposures (Rood 1990). Except in the steep slope areas noted above, no disturbance of these sites is anticipated.

Sixteen prehistoric lithic scatters, 23 historic sites (a school site, 13 homesteads, and 9 trash scatters) and 1 prehistoric/historic site have been found in and around the proposed rail spur corridor (Pool 1991; Tetra Tech, Inc. 1991). Thirty-one of these sites (13 prehistoric lithic scatters and 18 historic sites) have been recommended NRHP eligible or potentially eligible pending additional testing or archival research. Eight sites have limited research potential and are not considered NRHP eligible.

No prehistoric or historic sites have been found along the proposed transmission line corridor or the Huntley loadout facility (Husted 1989; Wood 1990).

2. Native American Resources

Native American (traditional) resources are sites, areas, and materials important to Native Americans for religious or heritage reasons. Sensitive resources may include some types of prehistoric sites, features and artifacts, contemporary sacred areas, traditional use areas (e.g., native plant habitat), and sources for materials used in the production of sacred objects and traditional tools.

Native American groups with traditional ties and concerns in the Bull Mountains area include the Crow, Blackfeet, GrosVentre, Sioux, Northern Cheyenne, Assiniboine, Shoshone, and Arapaho. Several areas that may contain resources sensitive to these groups have been located in the area. Sensitive site types may include vision quest sites, large rock features, rock art sites, burials, ceremonial structures, and dance grounds (Deaver 1986). Sensitive places in the area may include mountain peaks or springs.

CHAPTER IV

ENVIRONMENTAL CONSEQUENCES

This chapter contains the Agency's analysis of probable impacts to the human environment that would result from construction and operation of the proposed Bull Mountains Mine No. 1, its coal transportation system, and associated support facilities (the Project). It also contains the analysis of probable cumulative impacts that would result from adding the proposed activities to other existing and reasonably foreseeable activities in the Billings-Huntley-Roundup-Broadview area.

In order to perform the impact analysis contained in this chapter, certain assumptions were made. The following assumptions are for the purpose of this analysis only. They were not intended to be the final projection of future activities that may or may not materialize in the area over the next 44 years.

A. IMPACTS OF ALTERNATIVE 1

1. Assumptions for Alternative 1

Assumptions used by the Agency to perform the impact analysis for Alternative 1 include:

- The permit application package submitted by Meridian for operations associated with Bull Mountains Mine No. 1 with conditions attached, is in compliance with Montana Strip and Underground Mine Reclamation Act (MSUMRA) and other applicable State and Federal laws.

- Mining and reclamation technology would not change substantially throughout mine life.

- Labor, equipment, and/or market shortages/surpluses would not materially change projected levels of development.

- Impacts to coal supply or demand (regional or otherwise) are beyond the scope of this EIS.

- The life of the mine would be 44 years: 3 years for pre-mining development, equipment erection, and limited coal production; 30 years for active mining; 1 year for facility demolition and final reclamation; and a minimum of 10 additional years for bond release after seeding, fertilizing, irrigation, or other work to ensure revegetation was complete (see Table I-2). The life of the temporary loadout at Huntley would be 3 years: 2 to 3 months for upgrading the facility, 24 months for active loadout operations during early development at the mine, and 6 to 9 months for facility demolition, final reclamation, and bond release. The life of the rail spur would be 34 years: about 2 years for construction, 30 years for use during active coal hauling, and 1 year for decommissioning and limited reclamation. The term of the construction and operation activities considered in the cumulative analysis would be as specified in Appendix B.

- The Project as described in Appendix A would be initiated in early-1993.

- Reclamation would be initiated when an area was no longer needed for either mining or production operations. No reclaimed acres would be available for postmining land use until the end of mine life. Postmining land use at the Huntley loadout would begin after final bond release.

- The local short-term impacts of the Project are those that would occur during the period from premining development through bond release (i.e., 44 years at the mine and 3 years, including 24 months of loadout operation, at the Huntley loadout). Long-term impacts of the Project are those that would persist beyond final bond release. For construction and operation activities considered in the cumulative analysis, short-term impacts are those that occur during the term of the respective activities. Long-term impacts are those that would persist beyond the terms of these activities as indicated in Appendix B.

- An irreversible and irretrievable commitment of resources would occur when resources were either consumed, committed, or lost as a result of the Project.

  The commitment of a resource would be "irreversible" if the Project started a "process" (chemical, biological, and/or physical) that could not be stopped. As a result, the resource, or its productivity, and/or its utility would be consumed, committed, or lost forever.

  Commitment of a resource would be considered "irretrievable" when the Project directly eliminated the resource, its productivity, and/or its utility for the life of the Project.

- Qualitative terms are used to describe anticipated magnitude of impacts and, where appropriate, anticipated importance of impact to the human environment. The terms "major," "moderate," "minor," and "negligible" describe magnitude.

  "Significant," "potential to become significant," and "insignificant" describe importance.

  Impacts are assumed to be insignificant unless identified otherwise.

- Cumulative impacts are defined as collective impacts of the Project when considered in conjunction with other past, present, and reasonably foreseeable activities. (These activities are described in Appendix B.) Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

- The geographical limits for the analysis of probable impacts in this EIS primarily encompass the life-of-mine area, the railroad corridor, the powerline corridor, areas designated for hydrological mitigation outside the life-of-mine area, and the life-of-operation areas for associated development facilities located in the Billings-Huntley-

Roundup-Broadview area. Where larger geographical limits were established to allow for required analyses and assessment of impacts, a description follows:

Geology. The geologic study area is a region within the Bull Mountains basin defined by surface outcrops of the Fort Union Formation, specifically, the Tongue River Formation.

Vegetation. For the rail corridor, the study area included a 1- to 2-mile band along the 30-mile corridor. This area encompasses about 40,000 acres.

Wildlife. The wildlife study area includes the proposed life-of-mine area plus a 3.2 km (2 mile) buffer zone. This larger area was intended to reflect the limits within which wildlife would be influenced by a fully developed project. For the rail corridor, the study area included a strip of land about 1 and one-half to 2 miles wide along the entire corridor.

Transportation. The study area is bounded by existing highway systems and the proposed rail spur in Musselshell and Yellowstone counties. Roadway segments defining the study area are: Fatting Creek Road, Old Divide Road, U.S. Highway 87, Highway 312, Montana Route 3, and Heath Street in Huntley.

Socioeconomics. All of Yellowstone and Musselshell counties, the incorporated municipalities of Roundup, Billings, and Broadview and the unincorporated communities of Shepherd and Huntley are included in the study area.

Recreation. For recreation, the study area is bounded by Roundup on the north and Billings on the south with the proposed mine and Broadview being the east and west boundaries, respectively. In general, the study area encompasses a radius of about 50 miles.

Visual Resources. The visual study area includes all lands within 5 miles of, and with a direct line-of-sight to, mine-related facilities and activities.

- The employment assumptions for the economic analysis include: Meridian would be able to hire 75 percent of the direct mine-related employment from the available work force in the Billings labor market area, which includes Roundup, Broadview, Huntley, and Shepherd.

- An employment multiplier of .45 represents the number of secondary jobs created for each direct mine-related job.

- Ninety percent of all secondary employees would be hired locally.

- Demographic assumptions include: The average family size for mine-related employees would be 3.1 persons per family while secondary and construction employees would have an average family size of 2.1 persons per family.

- In-migrating workers would relocate within the study area as follows:

    - Seventy-four percent to Billings.

    - Thirteen percent to Roundup.

    - Seven percent to rural Yellowstone County.

    - Six percent to rural Musselshell County.

- Forty-five percent of the in-migrating children would be enrolled in grades kindergarten through 8th grade, 19 percent would be enrolled in high school, and 36 percent would not be enrolled in school.

- Income assumptions include: The average annual salary for jobs directly related to mine activities would be $33,309. The average annual salary for secondary workers would be $15,397. Both of these averages are based on the statewide average salary paid to mining and service sector employees in 1990.

- Fiscal assumptions include: Local government mill levies would remain at 1990 levels for the life of the mine. State funding and equalization for local school districts would not change for the life of the mine.

- The contract sales price of coal would average $15 per ton (1989 dollars) for the life of the mine.

2. Air Quality

a. Impacts to air quality in and around the surface facility complex from mining-related activities.

Major emissions during the construction, mining, and reclamation phases of the Project would be from generation of fugitive dust. The principal sources of fugitive dust would be from activities related to: land clearing; earthmoving; drilling and blasting; truck and/or train loading operations; wind erosion from coal, soil, and spoil stockpiles and conveyors; coal-handling operations; and vehicle traffic on unpaved haul roads. Dust generated from these open sources is termed "fugitive" because it is not discharged to the atmosphere in a confined flow stream (e.g., stack, chimney, or vent).

The air quality impact of a fugitive dust source depends on the quantity and drift potential of the dust particles injected into the atmosphere. The larger dust particles settle out near the source (often creating a local nuisance problem), while a considerable amount of fine particles are dispersed over much greater distances. Theoretical drift distances, as a function of particulate diameter and mean wind speed, have been computed for fugitive dust emissions. For a typical wind speed of 10 miles per hour (MPH), particles larger than 100 micrometers (μm) are likely to settle out within 20 to 30 feet from the source. (For comparison, a human hair has a thickness of 100 μm.) Particles 30 to 100 μm, depending on the extent of atmosphere turbulence, are likely to settle within a few hundred feet. Dust particles smaller than 30 μm are generally recognized as emissions that may remain indefinitely suspended.

Current State and Federal ambient air quality standards for particulate matter include only particles with a diameter less than or equal to 10μm (PM_{10}) because those are the particles that penetrate into the windpipe, upper lung, and deep lung (alveolar) regions of the respiratory tract. Even though the biological response of individuals differs, particle penetration to these areas poses the greatest health risk. Because of the low risk of adverse health impacts from deposition of larger particles in the respiratory passages of the head, particles over 10μm were excluded from the standard. Montana PM_{10} standards are shown in Table III-2.

Other pollutant emissions would include exhaust emissions from diesel-powered construction equipment, trucks, and other motor vehicles, and stack or ventilation emissions from the mine, boiler, and coal preparation and clean coal processing plant. Pollutants from these sources would include carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulates (PM_{10}).

Maximum Project-related 24-hour average PM_{10} impacts near the life-of-mine boundary during full coal production would range from about 3 to 79 $\mu g/m^3$. These PM_{10} concentrations equate to Total Suspended Particulate (TSP) concentrations of about 5 to 132 $\mu g/m^3$. These maximum concentrations are higher than concentrations typically found near the boundary. Greater impacts would occur on days that have light winds and poor dispersion conditions (temperature inversion). These conditions normally occur during winter in the early morning hours. Annual PM_{10} impacts at the life-of-mine boundary would range from 0.2 to 7 $\mu g/m^3$.

Total 24-hour average PM_{10} impacts (Project concentrations plus background concentrations) would range from 56 to 132 $\mu g/m^3$ near the life-of-mine boundary. Annual PM_{10} concentrations would range from about 9 to 16 $\mu g/m^3$. These concentrations would be well below Montana PM_{10} Ambient Air Standards (see Table III-2).

Air quality would occasionally be degraded by Project particulate concentrations in excess of the allowable 24-hour average Prevention of Significant Deterioration (PSD) Class II incremental TSP concentration of 37 $\mu g/m^3$. Particulate increment requirements are not applicable for the mine because estimated particulate emissions would be about 115 tons per year. A PSD permit would be required only if there were annual emissions of 250 tons or more from mining operations.

Gaseous pollutant concentrations (NO_2, CO, SO_2) would not exceed Montana Ambient Air Standards and air quality degradation by NO_2 and SO_2 would be less than the applicable PSD Class II increments.

In order to minimize air quality impacts from particulates, the following dust controls would be used, (for additional details, see Appendix A):

- Particulate emissions from the coal dryer would be controlled with a baghouse;
- Conveyors outside the mine portal would be partially enclosed. Water sprays would be used to minimize dust generation from the conveyors at transfer points;
- Coal stockpile feed conveyors would be equipped with variable tube stackers to minimize the fall distance to the pile and control spillage;
- Open coal stockpiles would be sprayed with water, as necessary;
- Coal crushing equipment would be equipped with water sprays;
- Water or other approved dust suppressants would be applied to active roadways and parking areas, as needed;
- Coal, rock, soil, and other dust-generating material would be promptly removed from all roads;
- Speed would be limited to 25 MPH on all roads within the mine property;
- Yard areas and parking lots would be graveled;
- Disturbed areas susceptible to potential fugitive dust emissions would be revegetated, mulched, or otherwise stabilized; and
- Topsoil and subsoil storage stockpiles would be revegetated as soon as possible after they were established.

The Agency concludes that impacts to air quality in and around the surface facility complex from mining-related activities would be minor over the short term and negligible over the long term.

b. Impacts to air quality along and around the rail spur from mining-related activities.

Direct emissions would result from construction of the rail spur, operation of coal trains, and reclamation activities. Fugitive dust would result from activities related to land clearing, earth moving, and vehicle traffic on unpaved roads. Fugitive coal dust emissions would come from the coal cars when trains passed. Exhaust emissions from diesel-powered construction equipment, trucks, other motor vehicles, and diesel locomotives would include carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulates.

Daily pollutant emission rates for rail spur construction and coal train operations are presented in Table IV-1. In order to estimate regional or County impacts, Musselshell County emissions were used since that is where most of the rail spur would be located (see Table IV-1). Emissions include those from fuel combustion in stationary sources, transportation, solid waste disposal, and industrial processes. The transportation category includes automobiles, trucks, buses, and trains (e.g., Burlington Northern trains). As shown in Table IV-1, particulates from rail spur construction would have the highest pollution rate. However, the increase in the County particulate burden from the proposed Project would be only 1 percent. NO_2 and CO emissions from rail spur construction would each add about 4 percent to the County pollutant burden.

Local, temporary increases in pollutant concentrations, especially fugitive dust (PM_{10}), could occur a few hundred feet downwind from railroad construction sites. When construction activities ended, pollutant concentrations would return to near background levels.

TABLE IV-1

Comparison of Rail Spur Construction and Coal Train Operations Pollutant Emissions With Musselshell County Emissions

Pollutant	Musselshell County Emissions[1] (lb/day)	Rail Spur Construction Emissions[2] (lb/day)	% Increase in County Emissions	Coal Train Emissions[2] (lb/trip)	% Increase in County Emissions
CO	12,707	81.6	0.64	87.9	0.69
NO_x as NO_2	3,616	134.1	3.6	250	6.5
SO_x as SO_2	395	15.5	3.8	38.5	8.9
Particulates	109,425	1,058[3]	0.96	16.9[4]	0.02

Notes:
[1] Source: National Emission Data System (Farrel 1992).
[2] Emission factors: EPA Document AP-42 (EPA 1985).
[3] Includes exhaust and fugitive dust emissions.
[4] Does not include coal dust.

Operation of coal trains would produce an increase in County SO_2, NO_2, and CO pollutant burdens and temporary increases in downwind concentrations of pollutants emitted in the exhaust of the diesel locomotives (see Table IV-1). At a residence located 500 feet from the railroad spur, these concentration increases would be brief, and concentrations would quickly return to background levels. Even though some coal dust would be blown from coal trains, it was not possible to quantify the amount because emission factors have not yet been determined for dust blowing from coal trains.

In the Broadview area, the addition of 1 train per day to traffic currently on the Burlington Northern mainline would not cause an appreciable change in local pollutant concentrations.

During reclamation, emissions from the equipment and vehicles used to remove the ties, rail, and ballast would produce some fugitive dust and diesel exhaust emissions. These would produce some temporary increases in concentrations, up to a few hundred feet downwind.

During construction of the rail spur, construction areas would be watered to minimize fugitive dust emissions. Regular preventive maintenance would be performed to minimize gaseous pollutant emissions from the construction equipment and other vehicles due to engine problems. Good maintenance practices would also be used on the diesel locomotives.

The Agency concludes that impacts to air quality along and around the rail spur from mining-related activities would be minor over the short term and negligible over the long term.

c. Impacts to air quality from truck haulage of coal on U.S. Highway 87, Highway 312, and Heath Street.

Haul trucks would enter U.S. Highway 87 at its southern intersection with Old Divide Road. They would follow U.S. 87 south to the intersection with Highway 312, then east along Highway 312 to Huntley. In Huntley, trucks would proceed south along Heath Street. These are all paved roads.

Direct air emissions would come from coal truck exhaust, particulate matter from wear of bearings and brake linings, abrasion of tires against the road surface and fugitive re-entrained traffic dust. Re-entrained fugitive dust consists primarily of common sand and soil, mostly tracked or deposited onto the roadway by vehicle traffic. Some of the direct emissions may settle to the roadway surface to be re-entrained. Re-entrainment rates are higher if the pavement surface has deteriorated. Some coal dust would escape during transport but could not be quantified since emission factors for coal dust from truck haulage were not available.

Daily emission rates for CO, NO_x, hydrocarbons (non-methane), and re-entrained dust are presented in Table IV-2. The percentage increases in Yellowstone County pollutant emissions that would result from hauling coal over the paved roads would be 0.1 percent or less (see Table IV-2). These small increases in pollutant emissions would contribute very little to the overall pollutant burden in Yellowstone County.

Local pollutant concentrations a few hundred feet downwind of the highway would increase briefly when a coal truck passed. These higher concentrations would quickly return to background levels after the exhaust plume passed a given downwind location.

TABLE IV-2

Comparison of Coal Truck Pollution Emissions
With Yellowstone County Emissions

Pollutant	Yellowstone County(1) (lb/day)	Project Coal Truck Emissions (lb/day)(2)	% Increase in County Emissions
CO	192,060	177.0	0.09
NO_x	96,263	138.8	0.14
Hydrocarbons	66,690	36.4	0.05
Particulates	208,904	99.8(3)	0.05

Note: (1)Source: EPA National Emission Data System, 1988 (Farrel 1992).
(2)Emission factors from EPA document AP-42 (EPA 1985).
(3)Re-entrained dust and exhaust particulates; coal dust from trucks not included.

Sometime after 1993, a 6.2 mile section of U.S. Highway 87, several miles south of the south end of Old Divide Road, is scheduled for reconstruction (see Appendix B). During the year of construction, cumulative traffic and truck traffic emissions downwind of this section of the highway would be higher than other areas adjacent to the haul route. The cumulative air quality effects would end upon completion of construction.

Coal dust emissions from haul trucks would be minimized by using tarps and/or special trailer designs, and limiting trucks to a maximum 15 mph on Heath Street in Huntley. Truck haulage would last for a 2- year period, after which pollutant concentrations would return to previous levels.

The Agency concludes that impacts to air quality from truck haulage of coal on U.S. Highway 87, Highway 312, and Heath Street would be minor to moderate over the short term and negligible over the long term.

d. Impacts to air quality in and around the Huntley area from construction, operation, and reclamation of the Huntley loadout.

Construction activities related to expansion of the Huntley loadout would produce fugitive dust and exhaust pollutants. During construction, pollutant emissions, especially fugitive dust, would move downwind and cause temporary increases in ambient concentrations a few hundred feet from the site.

Two major types of pollutant emissions, fugitive dust and coal dust, would come from operation of the loadout facility. Fugitive dust would be produced by truck travel on unpaved haul roads within the facility. Coal dust would be generated by coal dropping from trucks into bins, wind erosion from the stockpile and open conveyors, coal dropping from conveyors onto the stockpile and into rail cars, and bulldozing the stockpiles. Direct emissions of CO, NO_x, and particulates would occur from diesel equipment, trucks, and locomotives.

Predicted ambient pollutant concentrations, including Project impacts, background concentrations, and combined total concentrations are presented in Table IV-3. Table IV-4 describes the location of air quality monitoring receptors.

The predicted concentrations represent maximum values which would usually occur during the early morning hours when the winds are light and pollutant dispersion is at a minimum (temperature inversion). These worst case meteorological conditions usually occur during the winter and early spring. The average or typical concentrations would be lower than the values shown in Table IV-3. None of the total concentrations would exceed the Montana Ambient Air Quality Standards.

The maximum 24-hour PM_{10} concentration (37.6 $\mu g/m^3$), resulting from Project operations, indicates that the degradation of air quality would occasionally exceed the allowable PSD increment. The PM_{10} concentration of 37.6 $\mu g/m^3$ equates to a TSP concentration of about 63 $\mu g/m^3$. This concentration would be about 1.7 times the allowable PSD increment of 37 $\mu g/m^3$. None of the other Project pollutant concentrations would exceed the PSD Class II increment. PSD permit requirements would not be applicable to the facility because the estimated particulate emissions would only be about 12 tons per year.

Reclamation of the Huntley loadout would produce some fugitive dust and diesel exhaust emissions. Ambient pollutant concentrations would increase a few hundred feet downwind of the facility, during reclamation operations. Once reclamation was completed, pollutant concentrations would return to background levels.

In addition to pollutant emissions from the loadout, fugitive dust and exhaust emissions would occur from regular train traffic passing through the Huntley area, and from operation of the Huntley sugar beet loading site and grain elevator (see Appendix B). Sugar beets are stockpiled during October and hauled to the factory from October through January. Peak pollutant emission rates would occur in October with somewhat lower rates from November through January. Pollutant concentrations resulting from the combined operation of the 2 facilities would result in greater downwind air quality impacts from October through January.

TABLE IV-3

Summary of Predicted Maximum Ambient Concentrations for the Huntley Loadout Compared to Ambient Air Quality Standards and PSD Increments

Pollutant	Averaging Period	Receptor Identification[1]	Project Contribution ($\mu g/m^3$)	Background Concentration(2) ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Montana Standard ($\mu g/m^3$)	PSD Class II Increment ($\mu g/m^3$)
PM_{10}	24-hour	2	37.6	41	79	150	37 (TSP)
	Annual	3	6.8	14	21	50	19 (TSP)
NO_2	1-hour	1	95.0	20	115	565	*
	Annual	3	0.4	2	2	100	25
CO	1-hour	1	99.3	1,100	1,199	26,300	*
	8-hour	1	9.4	770	779	10,000	*

Note:[1] See Table IV-4.
[2] Source: Coenenberg 1992 and Urone 1976.
* No ambient PSD increment established by EPA.

To minimize fugitive dust emissions, a water spray system would be installed on the access roads and the coal stockpile (see Roads and Railroads, Appendix A). Coal would be transferred out of the pile by belt-conveyor through a reclaim tunnel. A flexible chute would help control coal dust emissions as the coal fell into rail cars. After the 2-year period of loadout use, pollutant concentrations would return to previous levels.

TABLE IV-4

Location of Air Quality Monitoring Receptors Shown in TABLE IV-3

Receptor Identification	Map Description
1	About 700 feet west of the center of the proposed loadout facility, near Northern Avenue.
2	About 650 feet southwest of the center of the proposed loadout facility, near the grain elevator.
3	About 1000 feet northeast of the center of the proposed loadout facility near the Heath Street intersection.

The Agency concludes that impacts to air quality in and around the Huntley area from construction, operation, and reclamation of the Huntley loadout would be minor over the short term and negligible over the long term.

3. Geology

a. Impacts to the stability of slopes and sandstone cliffs in and around the life-of-mine area from mining-related subsidence.

Effects of subsidence from the proposed longwall mining in the Bull Mountains can be described by 3 impact zones (Appendix C). The fragmented zone, which would fracture and collapse, is expected to begin immediately above the active mining area and extend up to 140 feet above that area. The next zone, the fractured zone, is expected to extend 400 to 600 feet above the fragmented zone and would fracture and deform. The deformation zone extends upward from the fractured zone to the surface. In the deformation zone, the ground would be expected to deform without fracturing; cracks could develop at the surface. Most surface cracks are expected to weather and close during the first 2 years following subsidence.

Surface effects of subsidence depend on characteristics of the overburden as well as depth of mining below the surface, height of coal seam removed, mine layout, and mining direction. Meridian proposes to remove 13.5 feet of coal, and maximum subsidence is predicted to be 9.5 feet (Agapito and Maleki 1989; Allgaier 1988). The trough of subsidence (see Figure C-3) predicted for the proposed mining area would be deepest at its center, graduating to little or no subsidence at the ultimate boundary of coal removal.

Throughout a particular subsidence trough, slope failures and toppling of sandstone cliffs may occur. Slope instability and failure, rock toppling, and alteration to topography and drainage patterns have the greatest potential to occur where steep slopes, weathered materials, and unstable structural conditions exist over the subsidence trough.

Subsidence-related failures would accelerate the slower, natural processes of weathering, erosion, sloughing, and toppling in the area. Where mountains and hills overlie mining, and overburden is thick, surface effects of subsidence would be expected to be most evident at the bases and edges of steep slopes. Eventually, slopes would stabilize and natural conditions would determine the extent to which toppling and sloughing would occur in the future.

The Agency concludes that impacts to the stability of slopes and sandstone cliffs in and around the life-of-mine area from mining-related subsidence would be minor over the short term and negligible over the long term.

4. Topography

a. Impacts to topography of the surface facility complex from construction, mining, and reclamation activities.

Activities associated with construction and operation of the Project would impact the landscape and topography of the life-of-mine area. Elevations in a portion of the area of the existing PM Mine, near the portal, would rise about 60 feet as the result of backfilling and grading the existing open pit high wall. In the main facilities area, postmining topography eventually would be similar to adjacent premining topography. Flat areas expanded during mining would have runoff controlled through sediment ponds. Planned reclamation would restore the main facilities area and roads to approximate original elevations and contours, while maintaining topographic diversity (see Waste Disposal Area, Appendix A).

Filling the waste disposal area (WDA) would change the existing valley into a gentler mountain slope (see figures A-10 and A-11, Appendix A). Postmining topography in the WDA would rise from 0 to 140 feet as a result of filling from mining activities. Slopes, slope construction, and revegetation would be designed for maximum stability and the new drainages, channels, and floodplains in the WDA would be designed to pass runoff at velocities that would not cause erosion (see Storm Water and Sediment Control Facilities, Appendix A). During filling, topography would be interrupted by abrupt benches and incomplete slopes as the waste material was deposited and compacted. After filling, some benches would still be present on the face but postmining topography would generally blend with adjacent undisturbed topography.

The Agency concludes that impacts to topography of the surface facility complex from construction, mining, and reclamation activities would be moderate to major over the short term and minor to negligible over the long term. In the WDA, there would be an irretrievable loss of topographical diversity.

b. Impacts to topography in and around the life-of-mine area from mining-related subsidence.

Mining-related subsidence has the greatest potential to alter drainage patterns and impact slope stability where steep slopes, weathered materials, and unstable geotechnical conditions overlie the subsidence trough. The lowering of ground surface, sloughing of slopes, and related filling of drainages and alteration of drainage patterns, would be most evident around the bases of hills and mountains. Sloughing of slopes related to subsidence, and resulting changes, are an acceleration of natural topographic change in the life-of-mine area.

The Agency concludes that impacts to topography in and around the life-of-mine area from mining-related subsidence would be minor over the short term and negligible over the long term.

c. Impacts to topography along the rail spur from construction and reclamation activities.

Construction of the proposed 33-mile rail spur would introduce a permanent change in topography along the majority of the 150- to 500-foot wide right-of-way. Extensive cuts-and-fills would be necessary to meet the needs of the design grade. In addition to the elevated railbed, numerous road crossings, road relocations, and bridges would impact local topography during mine operation.

During proposed reclamation, rail ties and ballast would be removed, and the railbed would be abandoned in place throughout much of the 33-mile length. The abandoned, elevated railbed, steep side slopes, and extensive cut-and-fill slopes would permanently change topography along the rail spur right-of-way except on State-owned parcels. Existing gentle slopes and terrain would be changed to include the abrupt profile of the railbed and road crossings.

The Agency concludes that impacts to topography along the rail spur from construction and reclamation activities would be moderate over both the short and long terms.

5. Soils

a. Impacts to soil productivity in areas of mining-related surface disturbance.

Surface disturbances related to proposed mining and associated activities have the potential to change the productivity of disturbed soils in the life-of-mine area, and the locations of ancillary facilities, including the Huntley loadout. Productivity of topsoils and subsoils that are stripped and stockpiled may be altered. Soil structure and horizonation would be altered to a certain extent as a result of soil salvage and redistribution activities. However, a two-lift soil salvage and redistribution method would be used to segregate topsoil and subsoil materials. This soil handling methodology minimizes mixing of surficial and subsurface horizons and, as such, reduces dilution of surface horizon organic matter and essential nutrient concentrations.

Soil compaction may result from scraper laydown of soil materials, but this problem should be alleviated by scarification of the reconstructed soil profile using a tillage implement (i.e., subsoiler). Stockpiling of soil materials may, in the long term, reduce soil micro-organism populations, soil fertility, and viable plant propagules. However, following soil replacement, the former will rejuvenate within a few years and the latter two problems will be overcome by seeding, shrub/tree seedling planting, and applying straw mulch to enhance soil organic matter content.

Following soil laydown, erosion hazard may be enhanced on steeper slopes until vegetation has been established. However, erosion would be reduced by conducting seedbed preparation activities on the contour, seeding within 90 days after soil laydown, and straw mulching and crimping steeper slopes.

Within the life-of-mine area, and the area to be reclaimed at the Huntley loadout, revegetation success would be enhanced by mulching, fertilization, pest control, access control, seedbed preparation, and appropriate soil replacement technique. Multiple vegetation communities are planned for revegetation. Erosion control measures, and reseeding plans would be implemented if necessary. Unsuitable material from the spoil would be segregated by special handling during placement in the WDA (see Backfilling (Special Handling), Appendix A).

Along the rail spur right-of-way, topsoil would be re-spread and an improved pasture vegetation seed mix would be used between the fire control barrier and right-of-way edge immediately following construction. The compacted subsoils and abrupt slope of this area would limit soil productivity and reduce expected revegetation success. During abandonment the area directly under the track ballast would be reseeded but would not be reclaimed, except on State-owned parcels, and the productivity of this 60 acres would be permanently reduced. Extreme compaction and reduction or loss in nutrient content and biological activity of soils in this area would limit natural revegetation success (see Topsoil Replacement, Appendix A).

The Agency concludes that impacts to soil productivity in areas of mining-related surface disturbance would be moderate to major over the short term and minor over the long term. Productivity losses under the track ballast would be irretrievable.

6. Hydrology

a. Impacts to ground and surface water supplies in and around the life-of-mine area from mining and mining-related subsidence.

Aspects of the mining operations that have the greatest potential to impact ground water supplies in and around the life-of-mine area include mine dewatering and removal of coal hydrologic units (see Figure IV-1). The Mammoth coal and saturated zones immediately above would be impacted during mining from removal and dewatering. The drawdown would extend furthest in the sandstone unit above the Mammoth coal but due to low permeability and relatively low hydraulic gradient, the drawdown would not extend far beyond the life-of-mine area. Five private wells using this aquifer have a high probability of being destroyed or removed by mining and related dewatering. Two private wells may have their productivity decreased by mining and related dewatering. In addition, the mining operation would reduce recharge to the upper underburden, the zone in the first 30 feet below the bottom of the

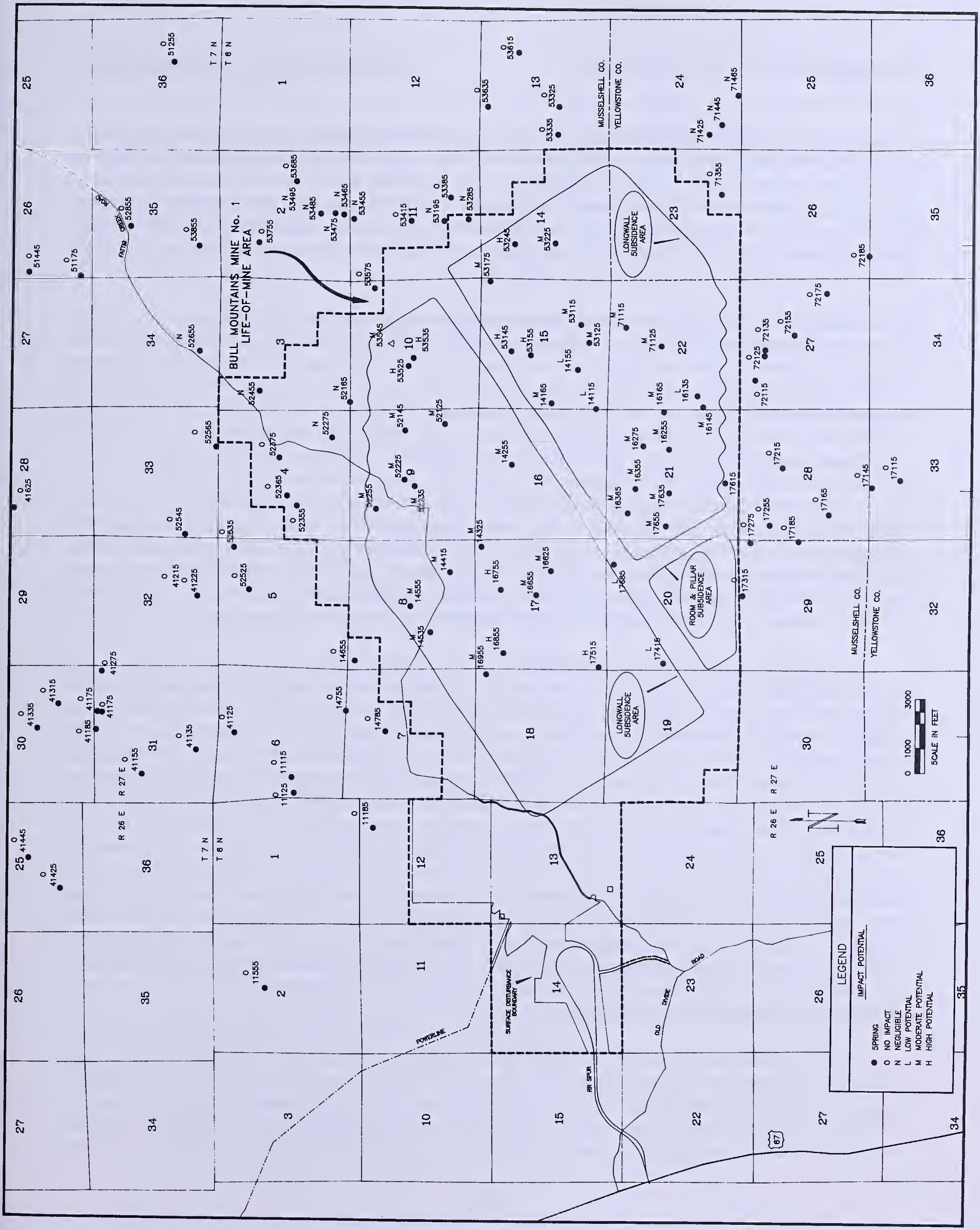

BULL MOUNTAINS MINE No. 1
LIFE-OF-MINE AREA
LONGWALL SUBSIDENCE AREA
LONGWALL SUBSIDENCE AREA
ROOM & PILLAR SUBSIDENCE AREA
SURFACE DISTURBANCE BOUNDARY
MUSSELSHELL CO.
YELLOWSTONE CO.
T 7 N
T 6 N
R 26 E
R 27 E
FATTIG CREEK
POWERLINE
RR SPUR
OLD DIVIDE ROAD
87
0 1000 3000
SCALE IN FEET
N
LEGEND
IMPACT POTENTIAL
● SPRING
O NO IMPACT
N NEGLIGIBLE
L LOW POTENTIAL
M MODERATE POTENTIAL
H HIGH POTENTIAL

Figure IV-1 Potential for impacts to springs

Mammoth coal. The zone has low permeability and the extent of impact should be limited. In 5 years, the extent of a 5-foot drawdown could be less than 2 miles. The mining operation would have minimal impact on the deeper underburden zone. After mining, flooding of lower workings would be allowed and filling of the mine pool would occur. Rate of pool rise should taper off due to seepage, and heads should eventually stabilize at the portal level, about 50 feet below the premining levels, and discharge into PM Draw. The mine pool should stabilize at the portal level as a result of seepage and portal discharge and should act as a permanent sink for area ground water.

Mining-related subsidence has the potential to impact ground water systems in the overburden. Water-bearing units would be affected to varying degrees depending on structural, locational, and mining-specific variables. Permeability increases and lowered water tables may be experienced as tensional stresses open cracks and fractures and accentuate the flow of water. Some changes in recharge and flow characteristics would be permanent. Following the initial deformation of subsidence, ultimate settlement would tend to compress tensile fracture widths to some extent and partial recovery of premining hydrologic conditions can be anticipated (Booth 1986 and 1992; Van Roosendaal et al. 1990).

While a single summarizing impact to the overall hydrologic balance of the life-of-mine area is difficult to predict, it is clear that shallow fractured bedrock and alluvial ground water systems that feed springs and seeps have the potential to be disrupted. The discharge of ground water from these systems to springs and seeps and ultimately through the tributary drainages could be diminished, lost, or relocated over the short and long terms. The possible disruption of flow through the tributary drainages could affect the potential alluvial valley floors (AVFs) in Rehder, Fattig, and Railroad creeks.

Hydrologic mitigation plans are proposed to ensure that quantities of ground and surface water would be replaced, and water rights protected, in and around the life-of-mine area. Water supplies would be replaced for landowners that would lose all or part of their water as a result of mining operations. Mitigation plans are proposed for springs and seeps that provide water for wildlife, livestock, and wetland plant communities and aquatic life. Specific plans propose implementable alternatives for mitigating losses to the springs and seeps having the highest potential for impact. Specific mitigation plans (see Table A-3, Appendix A) have been proposed for 42 springs (including Red Fork, Busse, Dunn Corner, Cold Water, Litsky, and Big). The remaining 88 springs in and around the life-of-mine area are not believed to be at substantial risk but would be monitored and appropriate mitigation implemented if mining-related impacts were detected (see tables III-3 and E-8, Appendix E). Tributary drainages to the potential AVFs and mine pool discharge would be monitored as well. Mitigation plans include phases that: 1) provide an interim water supply to impacted spring sites; 2) attempt to repair and enhance the natural restoration of impacted spring sites; and 3) if necessary, provide a permanent replacement or supplemental water source. Mitigation plans would ensure the maintenance of hydrologic functions for the potential AVFs. Mitigation techniques would include fracture sealing and flow rerouting, and using culverts and channel lining, where appropriate.

The potential for the success of hydrologic mitigation could be enhanced by planning flexibility. If natural restoration enhancement or low maintenance techniques were not successful, water would be replaced by wells and distribution systems. There may be short periods between mitigation phases or steps where water may not be available. When mitigation activities were complete, dependable supplies would be available. Mitigation systems could supply flows of water that could be slightly more or less than a particular spring previously discharged. Mitigation systems would have the potential to provide water for longer durations during the year than springs naturally provided. Replacement water supplies may, however, limit the water available to wildlife, change the quality and character of wetlands and limit water availability for future, competing uses. Mitigation systems would remain as long as needed after mine closure with maintenance supported by a financial trust established under the supervision of Montana DSL for permanent maintenance and operation of hydrologic mitigation facilities (see Hydrologic Mitigation, Appendix A).

The Agency concludes that impacts to ground and surface water supplies in and around the life-of-mine area from mining and mining-related subsidence would be minor to moderate over the short and long terms.

b. Impacts to water quality in and around the life-of-mine area from mining and mining-related subsidence.

Subsidence from longwall mining would have the potential to impact ground and surface water quality. Within the Bull Mountains area, ground water is of a quality marginally suitable and not recommended for direct human consumption due to high levels of inorganic (mineral) constituents including sulfate. Where surface water is the result of ground water discharging to springs and seeps, it is also not recommended for human drinking water. Subsidence from longwall coal mining would have the potential to increase levels of the same inorganic contaminants that currently limit the suitability of water for various uses . Concentrations of other ions may be increased as well.

As subsidence cracks and deforms rock layers that overlie mine workings, new rock faces are exposed to physical and chemical processes that occur where air and water can penetrate. The rock faces expose new minerals to ground water percolating through the fractures. These minerals can then be dissolved by the water, increasing the water's mineral content. This increase is generally offset by corresponding increases in percolation rates. The same subsidence forces and related fracturing that expose new mineral sources to ground water provide the means for that ground water to move through rock layers more quickly. Since ground water has more and wider fractures through which to move, the time that ground water remains in contact with a rock layer as it percolates through the layer is reduced. If ground water percolates more quickly, the ability of ground water to dissolve minerals may decrease.

Subsidence is not predicted to have a very large impact on concentrations of inorganic constituents in ground or surface water. Concentrations of inorganic constituents in postmining ground and surface water should remain at or near premining levels and water would continue to be suitable for wildlife, agricultural, and livestock uses (Thompson 1982; Reiten and Wheaton 1989).

The Agency concludes that impacts to water quality from mining and mining related-subsidence would be negligible to minor over the short and long terms.

c. Impacts to ground water quality and quantity in and around the life-of-mine area from mining and mining-related operation of wells.

Wells for potable water supplies, mining operations, and hydrologic mitigation plan requirements would be operated in the life-of-mine area.

Four existing wells, less than 200 feet deep in the Fort Union formation, would supply the potable water system within the surface facility complex. The wells would pump water to a treatment system and storage tank (see Ancillary Facilities, Appendix A). The predicted effect of operating potable supply system wells would be limited to minimal drawdown during operation. Test-pumping one of the wells at 5 gallons per minute (gpm) for 4 days resulted in no measurable change in other nearby wells. The wells would be plugged and sealed during reclamation.

Two wells (1 operational, 1 standby) would be designed to pump about 500 gpm from a depth of 8,000 feet in the Madison formation to supply water for coal preparation (see Wells, Appendix A). Estimated drawdown at 10 miles from the site, based on well head calculations, would be about 0.4 percent of the available head (U.S. Geological Survey 1979). Since there are no other wells extracting water from the Madison formation in the vicinity of the mine, impacts on ground water supplies from operating the deep wells would be limited to short-term drawdown or head loss, which should be minimal. The quality of surface and ground water downgradient from the coal preparation operations could be affected by the discharge of the brackish water pumped from the Madison Formation. The 2 wells would be plugged and sealed during reclamation.

Hydrologic mitigation activities (see Hydrologic Mitigation, Appendix A) include 2 shallow wells and 2 deep wells. The 2 shallow wells would be installed to replace disrupted spring flow where horizontal drains may not be effective due to access or topographical barriers or where the adjacent shallow ground water system had been dewatered. The shallow wells would penetrate the shallow fractured and weathered bedrock at 50 to 100 feet and would be pumped by windmills. The shallow wells would pump small quantities of ground water at variable rates to permanent storage and delivery systems. The wells would remain after mine closure. Maintenance would be supported by a permanent trust fund. The limited withdrawals should have no predictable effect on ground water supplies in the shallow aquifer system.

The 2 deep wells would be installed in those areas where subsidence-related fracturing is predicted to completely dewater the shallow ground water system. The deep wells are planned to penetrate deep underburden sandstone below the Mammoth coal seam. The 600- to 700-foot deep wells would be equipped with electric pumps for discharging water to permanent storage and delivery systems. Sustained yields between 10 and 14 gpm could be expected. Drawdowns, 2 miles from the well, are predicted to be between 13 and 50 feet which accounts for between 6 and 23 percent of the available 220-foot head. With no other known wells completed in the same formation, there is no potential for the deep hydrologic replacement wells to affect supplies for other uses. The wells would remain after the mine closed with maintenance supported by a permanent trust fund (see Hydrologic Mitigation, Appendix A). The effect of operating the deep replacement wells would be limited to the lowering of head.

The Agency concludes that impacts to ground water quality and quantity in the life-of-mine area from mining and mining-related operation of wells would be minor over the short term and negligible over the long term.

d. Impacts to ground and surface water quality in sections 12 and 13 from mine waste disposal.

Mine waste would be disposed of in the WDA. About 19,000,000 tons of waste would be spread over an underdrain of non-slaking rock with side drains that directed flows to the underdrain for discharge. The drain system would control the discharge of and to ground water in the vicinity of the WDA. Waste material would be spread on the WDA in maximum 2-foot lifts and compacted to 90 percent dry density (90 percent of maximum density at optimal moisture conditions) . Coal processing waste would be air-dried prior to compaction. Topsoil would be respread and the surface revegetated when final elevations had been reached. Diversion channels and sedimentation ponds would contain runoff from the WDA while under construction and until permanent vegetation had been re-established. Diversion channels in the WDA and sedimentation pond WDA would be designed to accommodate a 100-year/24-hour runoff event. There should be little or no potential for discharge of soluble or suspended waste constituents during construction or after completion of the WDA. However, if water that has percolated through the waste and accumulated soluble constituents were discharged to downgradient surface water and ground water, downgradient water quality would be impacted.

The Agency concludes that impacts to ground and surface water quality in sections 12 and 13 from mine waste disposal would be negligible to minor over the short and long terms.

e. Impacts to ground water quality in the Huntley area from loadout operation.

Dust control, runoff from stockpiled coal, and operations at Huntley loadout would produce runoff water with high amounts of suspended and dissolved solids. Runoff from operations and rainfall is currently directed to a lined sediment pond on the loadout site (see Appendix B). Directing runoff to the lined pond would continue to prevent large quantities of water from standing on the soil surface, infiltrating into the soil, and percolating toward ground water during proposed operations. Small quantities of runoff and precipitation would evaporate from the soils in the area. Coal waste and other materials are not expected to contaminate ground water in the loadout area. They would be collected in the pond and removed to the WDA during reclamation or as needed.

The Agency concludes that impacts to ground water quality in the Huntley area from the loadout operation would be negligible over the short and long terms.

f. Impacts to alluvial ground water supplies in the Huntley area from the water supply well at the loadout.

The water supply well at the Huntley loadout site was installed by Meridian in 1990 to supply water for dust control and operations purposes. The 20-foot well is installed in alluvial gravel that is characterized by sand and gravel mixed with very large cobbles. Assuming permeabilities in the mid-range characteristic of such aquifer materials (Freeze and Cherry 1949), the proposed pumping rate of about 20 gpm would create minimal drawdown as close as 1,000 feet from the well. The well is proposed to remain operational after Meridian's use of the loadout. Future operations should not extend drawdown effects beyond those predicted for Meridian's use.

The Agency concludes that impacts to alluvial ground water supplies in the Huntley area from the water supply well at the loadout would be negligible over the short and long terms.

7. Vegetation

a. Impacts to wetland communities in and around the life-of-mine area from mining-related subsidence.

Up to 9 acres of wetland communities could be disrupted by subsidence, reducing or eliminating critical ground water recharge to some of the springs and seeps in the area (Meridian Minerals Company 1989-1992). Not all sites making up the 9 acres would be completely disrupted. Impacts could range from short, intermittent, and temporary disruptions to total and permanent disruption, depending on the extent of subsidence at each location. Of the 5 springs having a high importance to vegetative communities, 3 are predicted to undergo a major impact from subsidence and 2 are predicted to sustain subsidence-induced impacts that have the potential to become major. Of the 4 springs with moderate importance to vegetative communities, 1 has been predicted to undergo a major impact from subsidence and 1 has been predicted to sustain an impact that has the potential to become major (see Table E-8, Appendix E).

Some wetland communities may be temporarily disrupted, with effects being similar to naturally-occurring drought or intermittent rather than continuous flow.

Upon complete loss of water at some affected sites, competitive relationships among plants could cause changes in community composition, with "dry-land" species replacing wetland species. Aggressive species, especially weeds, could initially flourish in those limited areas where moisture conditions and soil stability were extensively disturbed by subsidence.

Wetland communities permanently disrupted by subsidence would be replaced with alternative, consistent water sources, concurrent with planting of native wetland species (see Revegetation Operations, Appendix A). Natural revegetation would also begin immediately, principally from wind dispersion of the reproductive mechanisms of native wetland species. In some cases, an impacted wetland site that contains a depression might trap adequate precipitation moisture to maintain some of the previously existing wetland species.

Replaced wetland communities should be able to provide habitat diversity and function very similarly to original wetland communities within 2 to 5 years.

The cumulative 9 acres of disturbed wetlands represent a very small proportion of the life-of-mine area, less than 0.1 percent, but comprise a moderate proportion of existing life-of-mine area wetland communities (Meridian Minerals Company 1989-1992). However, existing sites would be affected gradually, over mine life, thus the impact at any given time should be minimal.

The Agency concludes that impacts to wetland communities in and around the life-of-mine area from mining-related subsidence would be moderate over the short term and minor over the long term.

b. Impacts to wetland communities along the rail spur from construction, operation, and reclamation activities.

Direct excavation and filling, eliminating most or all of the vegetation and disrupting the soil, would temporarily disrupt up to 1 acre of wetland community during rail spur construction (ECON INC. 1992b). The wetland acreage impacted would be a very small proportion of the land area bisected by the proposed rail spur.

To mitigate the 1-acre wetland disruption, depressions along the right-of-way borrow area would be created, forming more than 1 acre of new wetlands (see Revegetation Operations, Appendix A). Although right-of-way postconstruction seeding would not include wetland species, those species should establish in newly wet areas rather quickly (carried by the wind and in bird and animal droppings). The new wetland communities should be similar in composition and function to the disrupted community within 2 to 5 years.

The Agency concludes that impacts to wetland communities along the rail spur from construction, operation, and reclamation activities would be minor over the short term and negligible over the long term.

c. Impacts to vegetative productivity and community stability along the powerline easement and the rail spur from mining-related disturbance.

Disturbance along the powerline easement would have a small, temporary impact on vegetation productivity and stability. During construction, surface disturbance would cause temporary localized plant community instability, characterized by invasion of weedy plants. Where noxious weeds (spotted knapweed and Canada thistle) invaded, control measures would be used. The rhizomatous native grass species dominating the plant communities of the easement are resistant to disturbance and are strong soil stabilizers (ECON INC. 1991a).

Plant community disturbance within the rail spur right-of-way would be extensive during construction, particularly in cut-and-fill sections. The low productive potential of some soils would limit reclamation success on the western portion of the right-of-way.

Graded slopes between the fire control barrier and the edge of the right-of-way would be seeded immediately after rail spur construction. At the conclusion of rail use, the rails, ties and ballast would be salvaged and the base grade of the rail spur would be seeded with the improved pasture vegetation type seed mix and abandoned in place, except on State-owned parcels (see Revegetation Operations and Table A-2, Appendix A). The proposed treatments should provide long-term stabilization and productivity outside the fire barriers. The top of the abandoned roadbed may support a desirable plant community with stable but lower productivity in 10 to 15 years after abandonment. Introduced crested wheatgrass used to seed the roadbed should have no effect on the species composition of adjacent vegetation communities.

The Agency concludes that impacts to vegetative productivity and community stability along the powerline easement and rail spur from mining-related disturbance would be moderate to major over the short term, depending upon the success of the revegetation and the intensity of the uncontrolled weed invasion, and negligible over the long term. The loss of vegetation productivity until re-establishment by successful reclamation would be irretrievable.

d. Impacts to vegetative productivity and community stability within the surface facility complex and the Huntley loadout from mining-related disturbance.

Proposed mining-related activities would result in up to 871 acres being disturbed, of which 101 are already disturbed by the PM Mine. The disturbance would cause impacts to vegetation productivity and community stability within the surface facility complex. Impacts would occur from displacement of soils and vegetation during construction and operation activities. Weedy plants would accompany disturbance and could include noxious species, such as spotted knapweed, that could persist throughout mine life.

Proposed reclamation would return a number of grass-dominated plant communities to the area (see Revegetation Operations, Appendix A). Productivity and stability would be restored within 2 to 5 years to equal or exceed that of premining communities, although plant diversity could be reduced from premining levels.

Small stands of ponderosa pine community would be destroyed in the 170 acres making up the WDA portion of the surface facility complex. However, the ponderosa pine community is the most extensive vegetation community in the area and the affected acreage would constitute a small percentage of the type. The impact would be mitigated over time by reclamation planting of juvenile ponderosa pine (see Revegetation Operations, Appendix A).

The Huntley coal loadout would be cleaned up at the conclusion of coal-loading use. The sediment pond would be allowed to evaporate, and the sediment and liner along with any remaining coal waste would be removed to the WDA and buried. The pond site would be backfilled with the original soil and seeded (see Topsoil Replacement and Revegetation Operations, Appendix A). Vegetation establishment on the former pond site should be accomplished in 2 years if the site was not disturbed for some new commercial use.

The Agency concludes that impacts to vegetative productivity and community stability within the surface facility complex and Huntley loadout from mining-related disturbance would be moderate in the short term and negligible in the long term. The loss of vegetation productivity until successful re-establishment by reclamation would be irretrievable.

8. Wildlife

a. Impacts to tree- and cavity-nesting birds in and around the life-of-mine area from mining-related subsidence.

Most obligate cavity-nesting birds found in the area are small (e.g., woodpeckers, swallows, bluebirds, wrens) and make use of a variety of cavities in trees, rock cliffs, and earth banks. The 1984, wildfire swept through much of the Bull Mountains, creating an abundance of snags and potential cavities for small-bird nesting. Larger species such as prairie falcons, turkey vultures, and great horned owls have fewer options and for the most part are restricted to cavities found in rock outcrops. Other raptors nest in trees, large shrubs and on hill sides, all of which are plentiful in the area.

Subsidence could cause some trees and snags to fall, earth banks to fail, and rock cliffs to collapse. Home ranges of large cavity-nesting birds are large enough to allow them to take advantage of the abundant rock outcrop habitat available elsewhere. Subsidence would be more likely to create than destroy rock outcrop cavities. As reclamation progressed, rock piles as large as 1,000 square feet would be established at a density of about 10 to 15 piles per 640 acres (see Wildlife Habitat, Appendix A).

The Agency concludes that impacts to tree- and cavity-nesting birds in and around the life-of-mine area from mining-related subsidence would be minor over the short term and negligible over the long term.

b. Impacts to sharp-tailed grouse nesting and brood-rearing habitat, turkey-roosting habitat, and mule deer winter range from construction, operation and reclamation of the waste disposal area (WDA).

The WDA would fill a drainage that has timbered slopes and grassland valley floor representing a small proportion of the ponderosa pine-mixed grassland community in the life-of-mine area (Meridian Minerals Company 1989-1992). The WDA would be unavailable to most wildlife species during construction and use. As mature ponderosa pine were gradually removed from WDA slopes, turkey-roosting habitat would be reduced. As the drainage was filled, activity could temporarily displace turkey use of the WDA. Nesting and brood-rearing habitat for sharp-tailed grouse would be temporarily displaced to adjacent undisturbed ponderosa pine-mixed grassland habitat during construction. Construction and operation of the WDA would temporarily reduce deer utilization, especially during winter.

Similar topography and vegetation is available in adjacent drainages, well within the radius of daily sharp-tailed grouse, wild turkey, and mule deer activity. Reclamation plans call for restoring similar vegetation components and functions, but with some area and distribution differences. For example, final reclamation would restore some but not all of the timbered slopes present before construction of the WDA. Initial reclamation would include planting of trees and grassland with the shrub component left to natural invasion (see Revegetation Operations, Appendix A). As reclamation progressed, sharp-tailed grouse, turkeys and deer would likely be attracted to the area as a forb component became an important ingredient of early reclamation efforts. Initial plant communities with stands of forbs and grasses could enhance both nesting and brood rearing for sharp-tailed grouse, and food for turkeys and deer, and at maturation be as functional for those purposes as the original habitat.

The Agency concludes that impacts to sharp-tailed grouse nesting and brood-rearing habitat, turkey-roosting habitat, and mule deer winter range from construction, operation, and reclamation of the WDA would be minor over the short term and negligible over the long term.

c. Impacts to elk, deer, and antelope in the Bull Mountains area from increased human activity and development associated with mining-related activity.

Elk are not numerous in the Bull Mountains (92-100) and are probably maintained at a tolerance level established by landowners (Dusek 1978; Meridian Minerals Company 1989-1992). As human activities (e.g., mining, subdivision) increased, elk would redistribute their activities for avoidance when possible. Spreading subdivision, and adding more people, dogs, and livestock to adjacent elk habitat may have a greater impact on elk distribution than mining. When human activities increased to the point where adequate isolation for elk would be unavailable, elk numbers should decrease.

Mule deer appear more tolerant of human activity than elk, may compete less directly with domestic livestock, and are more numerous than elk in the Bull Mountains. Deer are observed commonly near ranches and in the vicinity of the current mining activity at the PM Mine. Antelope in the area are seasonal, moving out of the Bull Mountains onto Commanche and Hay basins during the winter. Much of the summer use by antelope is associated with agriculture. Antelope are apt to be influenced favorably by initial rail spur-reclamation planting communities.

Poaching levels in the Bull Mountains area are now considered "very low" but would be expected to increase somewhat with more human contact associated with Project development (Roger Fliger, Montana Department of Fish, Wildlife and Parks, personal communication, March 9, 1992).

The Agency concludes that impacts to elk, deer, and antelope in the Bull Mountains area from increased human activity and development associated with mining-related activity would be minor over the short term and negligible over the long term.

d. Impacts to wildlife productivity within the life-of-mine area from mining-related subsidence.

Gradual subsidence-caused changes that could temporarily influence the seasonal distribution of elk, deer, and other wildlife include topography, vegetation, and water availability. Water resources at 42 of the 130 existing springs and seeps in the Bull Mountains area could be disrupted by mining-related subsidence (see Hydrologic Mitigation and Table A-3, Appendix A). Of the 8 springs having a high importance to wildlife, 3 are predicted to undergo a major impact from subsidence and 3 are predicted to sustain subsidence-induced impacts that have the potential to become major. Of the 16 springs with moderate importance to wildlife communities, none have been predicted to undergo a major impact from subsidence and 6 have been predicted to sustain an impact that has the potential to become major (see Table E-8, Appendix E).

It is unlikely that subsidence would be perfectly uniform. Resultant topographic and vegetation changes could provide somewhat greater habitat diversity than currently exists. Changes in ground configuration could cause exposure of mineral soil, which could result in greater vegetative diversity. Animal den sites could be disturbed and created. Most wildlife species are accustomed to irregular ground surface, so "accidents" as a result of subsidence are not likely.

Water resources disrupted by subsidence would be replaced by various methods such as optimizing water retention, pond development, spring renovation, water distribution system development, repair of shallow fractures, horizontal drains, vertical wells, and guzzlers. In the interim between disruption and mitigation, rapid response methods to assure a continuous water supply would include hauling water to temporary or existing stock tanks (see Interim Water Supply, Appendix A). Wetland enhancement of 9 acres outside the life-of-mine area would provide additional mitigation for wetlands being temporarily or permanently disrupted. The provision of assured permanent water sources by reclamation would allow wildlife distribution to approximate present conditions.

Shallow fractured bedrock and alluvial ground water systems that feed springs and seeps have the potential to be disrupted by several aspects of mine construction and operation. The discharge of ground water from these systems to springs and seeps would be diminished, lost, or relocated over the short and long terms. Disruption of water supply may affect up to 15 acres of wetlands to varying degrees. Impacts may range from temporary disruption with effects being similar to naturally-occurring drought or intermittent water supply, to complete loss of water, (and aquatic habitat) at some affected sites. Aquatic animal communities would be correspondingly affected. Complete loss of water to an aquatic habitat would result in the loss of the associated animal community. Impacts could range from short, intermittent, and temporary disruptions to total and permanent disruption, depending on the extent of subsidence expression at each location. Potential effects include shifts in invertebrate community structure, with species tolerant of disturbed situations becoming more competitive; loss of some less tolerant species; and concentration of aquatic animals, increasing competition for food in an already stressed aquatic system. Larger, more mobile aquatic species may be displaced to surrounding unaffected habitats, depending on their availability. Of the 4 springs having a high importance to aquatic animal communities, 2 are predicted to undergo a major impact from subsidence and 2 are predicted to sustain subsidence-induced impacts that have the potential to become major. Of the 7 springs with moderate importance to aquatic animal communities, 2 have been predicted to undergo a major impact from subsidence and 2 have been predicted to sustain an impact that has the potential to become major (see Table E-8, Appendix E).

Specific mitigation plans (see Table A-3, Appendix A) have been proposed for 42 springs. The remaining 88 springs are not believed to be at substantial risk but would be monitored and appropriate mitigation applied if mining-related impacts were detected (see Table E-8, Appendix E). Aquatic animals would be expected to colonize mitigation sites and replaced wetland communities should be able to provide values and functions similar to original wetland communities within 5 years.

The Agency concludes that impacts to wildlife productivity within the life-of-mine area from mining-related subsidence would be minor over the short term and negligible over the long term.

The Agency concludes that impacts to aquatic animals in the life-of-mine area from mining and mining-related subsidence would be minor to moderate over the short term and negligible over the long term.

9. Transportation

a. Impacts to traffic flow and public safety along public highways from mining-related traffic.

There would be more traffic on public highways in Musselshell and Yellowstone counties when the proposed coal mine began operation. Mine workers would drive from home to work, trucks would haul coal from the mine to the loadout at Huntley, and service-related vehicles would travel to the mine to deliver supplies and perform construction and maintenance operations at the mine.

The impact of mine worker and service-related traffic would last throughout the time of coal removal. Mine worker traffic would be added to U.S. Highway 87, Old Divide Road, and Fattig Creek Road. On an average day, 400 vehicle-trips could be added to these roadways. These trips would occur throughout the day with peak traffic at times when work-shift changes occurred. It is anticipated that there would be a small number of mine service-related vehicle trips during daytime hours.

Trucks hauling coal from the mine and returning to reload would add to the number of trucks traveling on roadways in the area during the 2-year operation of the Huntley loadout. Trucks would operate 24 hours a day at a rate of 4 trucks per hour (see Coal Transportation, Appendix A). This would add a maximum of 192 truck trips per day to the truck haul route. After construction of the proposed rail spur, coal hauling to the Huntley loadout would be discontinued.

The overall impact of mine-related traffic would be to add more vehicles to the area roadways, thereby lowering the Levels-of-Service (LOS) and potentially increasing the number of accidents. Increased exposure between mine-related traffic and school buses could increase the chance of an accident (Donald Cromer, personal communication May 4, 1989). All of the proposed coal trucks and mine-related traffic traveling to and from the Billings area would cross the pedestrian school crossing north of the U.S. Highway 87/Highway 312 intersection.

Coal trucks traveling at normal highway speeds could have some flying rock/coal coming from their loads. The loose material could distract a following or passing driver and cause loss of vehicle control. Excessive dust could obscure visibility. Covered loads, washed coal, and air foil windscreens proposed for the trucks would lessen the chance of flying rock/coal from the trucks.

Since there are no traffic signals at either the north or south Old Divide Road/U.S. Highway 87 intersections, all turning traffic from Old Divide Road onto U.S. Highway 87, and left-turning traffic from U.S. Highway 87 onto Old Divide Road must yield to through traffic on U.S. Highway 87. Mine-worker and service-related traffic could reduce the LOS of the 2 intersections since there would be more vehicles using the intersection and vehicles would wait longer to make turns onto or from U.S. Highway 87. A small number of worker and service-related vehicles could come from the north on Fattig Creek Road.

Coal trucks move slower and require more space and time to make a turn at intersections. They also need more time to accelerate to a normal travel speed from a stopped position. Since southbound trucks would leave Old Divide Road at the south intersection with U.S. Highway 87, they would be assisted in reaching normal travel speed by a slight downgrade. Coal trucks could lower the LOS of the Old Divide Road/U.S. Highway 87 intersection because vehicles would have to wait longer to make turns onto U.S. Highway 87 (Donald Dusek, personal communication, May 31, 1991).

At the Old Divide Road/ U.S. Highway 87 intersection, several factors could contribute to the accident rate: drivers waiting to make turns from Old Divide Road onto U.S. Highway 87 could become impatient and turn onto the highway in front of traffic on the road; because of a roadway curve and grade on U.S. Highway 87, drivers could misjudge the space and time needed to turn onto U.S. Highway 87; and drivers on U.S. Highway 87 might have to slow down for the mine-related turning traffic (Donald Dusek, personal communication, May 31, 1991).

Since coal trucks would slow to go up long, steep grades, and since passing zones are not available, the trucks would slow vehicles behind them. The reduction of speed, bunching of traffic into platoons, and inability to maneuver freely could lower the LOS on U.S. Highway 87. Two segments of U.S. Highway 87 could suffer a decrease in LOS from "B" to "C" due to roadway conditions and vertical grades. One segment starts at the Musselshell-Yellowstone county line and extends 2 miles south. The second segment begins 1 mile south of Old Divide Road intersection and extends 4.5 miles south. Overall, acceptable and stable traffic flow would continue to occur along U.S. Highway 87 with coal trucks causing occasional traffic speed reductions.

A greater percentage of trucks on the highway and trucks moving slower than other vehicles increases the chance of an accident (Donald Cromer, personal communication, March 21, 1989). Two other factors that could contribute to increased truck accidents are trucks' requirements for greater stopping distances, and hills that limit the sight distance for truck drivers. These factors become more important at night and during the winter months.

Reconstruction projects on U.S. Highway 87 would result in a better roadway surface, add stronger and better shoulders, and increase the traffic capacity and safety of the roadway. The increased traffic from mine workers, coal trucks and service-related vehicles would add congestion to the highway during the reconstruction projects. Vehicle stops, delays, and accidents while travelling through a highway work zone would be more frequent with the addition of more traffic. Coal trucks delayed at construction sites could then bunch together rather than being spaced at 15 minute intervals.

Most of the mine-worker and service-related traffic from the Billings area would travel through the U.S. Highway 87/Highway 312 intersection. This additional traffic would increase the vehicle delay and add to congestion at the intersection. The increase in vehicle delay and congestion should not reduce the LOS of this intersection.

Coal trucks traveling from the mine to Huntley could have a difficult time turning at the U.S. Highway 87/Highway 312 intersection (Donald Dusek, personal communication, May 31, 1991). The left turn from southbound to eastbound toward Huntley is greater than 90 degrees and must be made after a stop. Before turning, the coal trucks would need to wait for a gap in the through traffic on Highway

312. If the wait for a gap was long, trucks could begin the turn without enough time and space, impeding the eastbound and westbound through traffic. This slow maneuver by a fully-loaded truck could reduce the capacity and LOS of the intersection.

Coal trucks returning to the mine from Huntley would have a difficult right-turn maneuver from westbound to northbound at the U.S. Highway 87/Highway 312 intersection (Donald Dusek, personal communication, May 31, 1991). The path of the truck wheels might not stay within the width of the roadway and the truck tires could ride up onto the curb or track off the pavement onto the roadside. Trucks would make the turn at slower-than-normal speeds and could delay other traffic, thereby lowering the intersection's LOS.

Even though mine-worker and service-related trips would increase traffic on Highway 312, stable and acceptable traffic flow should be maintained. However, coal trucks would travel slower along Highway 312, especially near the U.S. Highway 87 intersection, and since there are no passing zones, the trucks could slow vehicles behind them, bunching traffic into platoons and restricting maneuverability on Highway 312. This increased vehicle delay and restriction of maneuverability should not qualitatively reduce the LOS of this intersection.

On Highway 312, accidents involving coal trucks could occur at a rate greater than for other vehicles, especially during the winter months (Donald Cromer, personal communication, March 21, 1989). This is because coal trucks may travel more slowly and require a greater distance to stop than other vehicles, take longer to turn, and to accelerate to normal travel speed.

The interaction of coal trucks with seasonal sugar beet and grain truck traffic in Huntley would be of short duration and would occur on roads with light traffic volumes.

The LOS of the Highway 312/Heath Street intersection and at the entrance to the loadout facility could be reduced because of the increased number of vehicles. The potential for accidents would increase with additional trucks approaching the intersections at the same time.

There are few residences on Heath Street in Huntley. Vehicle trips generated from these residences should create few conflicts between the proposed coal trucks going in and out of the loadout. With good sight distance in all directions, and coal trucks restricted to 15 MPH, accidents involving the coal trucks and cars traveling in the Heath Street area should be avoidable.

Because the rate of accidents rises with increases in traffic (American Association of State Highway and Transportation Officials 1990), more accidents would occur at all the intersections and on all roadways . Accidents should continue to occur at about the existing rate per million vehicle-miles.

The Agency concludes that the impact to traffic flow and public safety along public highways from mining-related traffic would be moderate with the potential to become significant during the 2 years the Huntley loadout is in operation. Impacts should be negligible over the long term.

b. Impacts to traffic flow and public safety on public and private roads between U.S. Highway 87 and Montana Route 3 from coal train traffic crossing roads.

Coal trains would delay traffic no longer than 10 minutes at the at-grade railroad crossings between the proposed mine and railroad siding south of Broadview (see The Bull Mountains Rail Spur, Appendix A). More vehicles would be stopped on those roadways with higher daily traffic volumes. Trains crossing County and State (Montana Route 3) highways would stop and delay the highest number of vehicles during peak periods of traffic.

When the trains crossed, vehicles would form a line. Traffic would resume after trains passed. The line of vehicles would temporarily lower the LOS, but would quickly disperse because daily traffic volumes are not high and the geometry of the roads is adequate.

The railroad crossing of Montana Route 3 would be located within a 6.5 mile area scheduled for reconstruction in 1995 (see Appendix B). The vehicle delays for construction could be increased because of the railroad crossing. The presence of the railroad crossing could lengthen the reconstruction schedule and increase construction costs.

Coal trains crossing County roads would create the potential for accidents. If sight distance was inadequate as drivers approached an at-grade crossing, there could be vehicle/train or vehicle/vehicle collisions. Sight distance would more likely be limited in areas where crossings occur in hilly terrain or where roadways are curved.

Exposure between traffic and coal trains would be small because trains would run infrequently and traffic would be low. Even with good sight distance, accidents could occur because of poor driver judgement and/or inattentive driving.

The Agency concludes that the impacts to traffic flow and public safety on public and private roads between U.S. Highway 87 and Montana Route 3 from coal train traffic crossing roads would be minor over the short term and negligible over the long term.

c. Impacts to the integrity/stability of County and State roads from trucking coal from the mine to the Huntley loadout.

The required thickness of roadway pavement is determined by the amount of traffic and number of heavy vehicles on the road. Roadway pavement has a limited life before it requires repaving or reconstruction.

Repeated trips of heavy vehicles on a roadway impact both the pavement surface and the pavement structure below the surface (Yoder 1975). Surface impacts include potholes, small pavement cracks and general wear and tear of the surface. Impacts to pavement structure result in large areas of pavement cracking, breakup of the pavement, dips in the road, or ruts in the wheel paths.

Coal trucks traveling to Huntley would carry loads with an average weight of 37.8 tons (see Coal Transportation, Appendix A). These trucks could accelerate the rate of damage to pavement surface and shorten the life expectancy of the pavement structure. Pavement degradation would increase the need for and cost of maintenance and necessitate roadway reconstruction sooner than expected (Donald Cromer, personal communication, November 18, 1991).

Damage to the all-weather gravel surface on that portion of Fattig Creek Road used for mine access would also be accelerated. It could become rutted and develop potholes and dips in the surface, thus necessitating continual maintenance.

The pavement surface and structure of Old Divide Road would deteriorate faster from numerous heavy coal trucks. Resurfacing and reconstruction would be necessary sooner because the lifespan of the pavement would be reduced. Repair work would be necessary during coal hauling.

Coal trucks would accelerate wear and tear on U.S. Highway 87 and Highway 312, increasing the need for resurfacing and reconstruction of some segments (Donald Cromer, personal communication, November 18, 1991). U.S. Highway 87 would sustain the coal truck traffic better than Highway 312 because recent and proposed reconstruction projects would provide generally stronger pavement. Maintenance projects could be necessary during the hauling period, and road reconstruction could be required on Highway 312 sooner than expected.

Coal trucks would worsen existing pavement damage to Heath Street in Huntley. The pavement surface would break up especially at the intersection with Highway 312. Heath Street could require repaving during the coal hauling period.

The Agency concludes that impacts to the integrity/stability of County and State roads from trucking coal from the mine to the Huntley loadout would be major and significant over the short term and minor to moderate over the long term.

d. Impacts to the integrity/stability of County roads in the life-of-mine area from mining-related subsidence.

Mining activities could cause subsidence of Fattig Creek Road where it crosses the life-of-mine area. Subsidence would cause dips in the roadway and/or a weakened roadway structure. Subsidence would force slower vehicle travel because of uneven roadway surfaces. Heavy vehicles traveling on roadways weakened by subsidence could cause further settlement.

Poor road surface conditions would increase vehicle operating and maintenance costs. Weaker road surfaces and roadbed structure would require gross vehicle weight restrictions on the County roads.

An agreement with Musselshell County requires Meridian to repair any damage to Fattig Creek Road due to subsidence. Meridian would be responsible for temporary or permanent relocation of any sections of the road which could not be maintained in a satisfactory condition.

Subsidence could continue after mining activities stopped. However, without repeated use by heavy vehicles, the chance of roadway damage would be reduced.

The Agency concludes that impacts to the integrity/stability of County roads in the life-of-mine area from mining-related subsidence would be minor over the short term and negligible over the long term.

10. Noise

a. Impacts to the Bull Mountains area from noise generated by mining-related activity.

The subjective effects of noise on humans depends on a combination of physiological and behavioral traits. By nature, subjective effects are difficult to describe because different people react differently to noises. For example, a jet airplane flying overhead may disrupt a conversation between people and cause momentary hearing loss. One person might term this occurrence as extremely annoying, whereas another person may find it only a mild nuisance. Community reaction surveys have found that prolonged L_{dn} noise levels approaching or above 80 dBA generally disturb people enough that they take vigorous community action to try to reduce or eliminate the noise source.

During construction, the principal source of noise would be from operation of equipment. It was assumed that construction would occur only during the daytime. Noise levels in the vicinity of equipment would range from 80 to 90 dBA. Noise levels decrease with distance from the source. At 1,000 feet from the source, levels would be about 60 dBA while at 4,500 feet they would be at an acceptable level of about 51 dBA.

During the anticipated 24-hour a day mine operation, principal noise sources would be preparation plant equipment, ventilation fans, construction equipment, conveyors, dumping of coal into bins, trucks, and rail cars. The L_{dn} noise levels would range from 72 to 95 dBA in the vicinity of the main facilities. The L_{dn} noise levels would decrease and reach acceptable outdoor levels of about 40 dBA at the nearest residences (about 4,500 feet from the proposed mine site).

Occasionally, there would be blasting in the rock quarry. "Blast noise," in contrast to traffic noise, is impulsive, generally lasting less than 1 second, and has a rapid onset that can produce a "startle" effect. The noise level at a given location is a function of the source strength (charge weight), meteorological conditions, (e.g., temperature inversion, wind direction and speed) and distance to the observer. Blasting noise from the proposed quarry would probably be audible at the nearest residences as well as others within 1 to 2 miles.

Heavy equipment used at the mine would be well maintained and fitted with adequate mufflers to minimize noise levels. Also, loud stationary equipment would be partially or completely enclosed.

The Agency concludes that impacts to the Bull Mountains area from noise generated by mining-related activity would be minor over the short term and negligible over the long term.

b. Impacts along the rail spur from railroad construction and train-generated noise.

Railroad construction equipment would temporarily increase noise levels along the proposed rail spur. It was assumed that construction would occur only during daylight hours. Residences within 1,000 feet of the right-of-way would be subjected to acceptable outdoor noise levels of 55 to 60 dBA during construction. This impact would be temporary since, at any given location along the right-of-way, construction activities should not last more than 45 days.

During regular operations, L_{dn} values would be about 42 dBA at residences 500 feet from the right-of-way and about 38 dBA at residences 1,000 feet from the right-of-way. These L_{dn} values are relatively low because a maximum of only 1 train per day would travel from the mine to Broadview. However, during the few minutes that would be required for the train to pass, noise levels would be 85 to 90 dBA at 500 to 1,000 feet from the right-of-way.

In the Broadview area, L_{dn} values would be somewhat greater than those presented above. These higher values would result from the regular train traffic on the Burlington Northern mainline which passes through Broadview.

The Agency concludes impacts along the rail spur from railroad construction and train-generated noise would be minor over the short term and negligible over the long term.

c. Impacts from noise generated by coal trucks traveling from the mine to the Huntley loadout.

Coal truck traffic would increase ambient noise levels along U.S. Highway 87, Highway 312, and Heath Street. An increase of about 4 dBA to a maximum L_{dn} value of about 63 dBA would occur 100 feet from the edge of the roads. An L_{dn} value of 63 dBA has been known to elicit widespread community complaints.

Sometime after 1993, reconstruction of 6.2 miles of U.S. Highway 87 is scheduled several miles south of the south entrance to Old Divide Road. If this reconstruction takes place during the time proposed for hauling coal by truck, cumulative noise levels would be higher than along the rest of the route during the 1-year reconstruction period. After reconstruction was completed, cumulative noise impacts would stop and noise would resume preconstruction levels.

Trucks hauling coal would be well maintained and fitted with adequate mufflers to minimize noise levels. Banning the use of "jake" brakes in Huntley and restricting speed on Heath Street to 15 MPH would also help reduce noise. (see Coal Transportation, Appendix A). Truck hauling would be continual during a 2-year period, after which noise levels would return to previous levels.

The Agency concludes impacts from noise generated by coal trucks traveling from the mine to the Huntley loadout would be minor to moderate over the short term, and negligible over the long term.

d. Impacts to the Huntley area from the generation of noise due to the construction and operation of the Huntley loadout.

Huntley loadout would be upgraded over a 2- to 3-month period (see Huntley Truck Haul and Loadout, Appendix A). Noise during this period would be construction equipment. Noise levels would range from 55 to 60 dBA at 1,000 feet. Noise would decrease to ambient levels (45 dBA) at 3,000 feet.

Noise sources associated with operation of the loadout would include arrival and departure of trucks and trains, operation of conveyor belts, dumping coal into the dump bin, dozing the pile, and loading railroad cars. Noise levels within 100 feet of the facility would range from 80 to 85 dBA. Noise levels at the nearest residence, about 500 feet away, (see Figure A-3), would range from 55 to 60 dBA. Noise generated during operation of the loadout would be noticed by Huntley residents, and occasionally would be above acceptable levels recommended by the EPA.

Noise generated by sugar beet and grain trucks from October through January would be added to noise from coal trucks and the loadout facility. Noise impacts would be greater during this 4-month period than during the rest of the year. Regular train traffic would also increase noise levels as trains passed through Huntley.

In order to minimize night-time noise levels at the coal loadout, the bulldozer and loader would have strobe warning systems replacing standard backup alarms. This modification is subject to regulatory approval by the U.S. Mine Safety and Health Administration. After the 2-year use of the Huntley loadout, noise would return to previous levels.

The Agency concludes that impacts to the Huntley area from the generation of noise due to the construction and operation of the Huntley loadout would be minor to moderate over the short term, and negligible over the long term.

11. Socioeconomics

a. Impacts to employment, personal income, and population from mining-related activities.

Employment created by construction and operation of the proposed mine would include jobs 1) at the mine site, 2) related to transportation of coal to Huntley (years 1 and 2), at the loadout facility in Huntley (years 1 and 2), due to transportation of coal by railroad (years 3 through 32). In addition, it is expected that secondary jobs would be created due to the demands for goods and services from employees directly related to mine activities.

Local hire ratios are expected to average 75 percent for mine-related workers and 90 percent for secondary workers. About 90 direct and secondary workers and their families are expected to migrate into the area. Three-fourths (68) of the in-migrating workers are expected to move to Billings, while 12 are expected to move to Roundup and 10 to rural areas of the 2 counties. Population impacts on local communities from the Project would be less than 1 percent in Billings and surrounding rural areas, and less than 2 percent in Roundup.

Construction employment would total about 88 jobs; 38 positions at the mine, 12 at the loadout facility, 26 related to the rail spur, and 12 for powerline construction (see Table I-3). From years 1 through 3, operations employment would involve about 300 jobs at the mine, 12 at the loadout facility, and 50 related to coal transport. Following completion of the rail spur, direct mine-related employment would involve jobs only at the mine site; about 300 jobs through mine life. Secondary employment created by mine-related activities (primarily in the trades and services sectors) is expected to total 133 jobs. Most secondary jobs would be created in the Billings area where a majority of the mine workers are expected to live and purchase goods and services.

The Project may compete with several projects in attempting to hire local employees (see Appendix B). In January of 1992, the Billings labor market area, including Billings, Roundup, Huntley, and Broadview, had about 5,000 active applicants seeking employment (Mike Melbourne, Billings Job Service, personal communication, January 29, 1992). Various components of the proposed Project could be expected to require about 225 mine-related workers, 53 transportation and loadout facility workers, and 120 secondary workers from the local available labor force.

While total employment in Musselshell County would increase by an estimated 300-350 jobs (an impact of 20 percent), the economic base would not expand appreciably since most of the workers are projected to live in Yellowstone County. Total employment in Yellowstone County, which would consist of jobs at the Huntley loadout facility and secondary jobs, would be impacted by less than 0.1 percent.

Total wages and salaries (1990 dollars) due to mine-related activities should amount to about $12.0 million per year during full operations. Almost $10.0 million of this income would be directly related to the Project, while an additional $2.0 million would be attributable to secondary employment. Further income also would be realized through the local purchase of supplies and equipment by the mining company. Meridian expects to expend about $3.4 million per year on local purchases (Bob Ochsner, Meridian Minerals Company, personal communication, February 3, 1992).

Little impact on income in Musselshell County is expected since a majority of workers are projected to reside in or near Billings. Consequently, most of the income is expected to be spent in Yellowstone County. In 1989, total earnings in Yellowstone County surpassed $1.2 billion, therefore the impact on Yellowstone County earnings from mine-related activities should be less than 0.5 percent.

Following the conclusion of mining, the number of jobs lost could eventually total about 433 direct and secondary jobs. Negative impacts to employment and income would occur at about the same rate as when the jobs were created. The population may be impacted less since workers associated with the mine may not leave the area because of local employment opportunities, lack of job availability in other areas, or because of family ties or other personal relations in the immediate area.

The Agency concludes that impacts on employment, personal income, and population from mining-related activities would be moderate and beneficial to Musselshell County and minor and beneficial to Yellowstone County over the short term. Over the long term, employment, personal income, and population impacts from mining-related activities are expected to be moderate and negative to Musselshell County and minor and negative to Yellowstone County.

b. Impacts to public sector fiscal conditions from mining-related activities.

Direct tax revenues from the proposed mine and related facilities should average about $9.0 million per year (1989 dollars). Musselshell County is expected to receive about $1.2 million per year, increasing total revenues to the County by about 80 percent. Roundup Elementary and High School districts should realize increased general fund revenues of 30 percent, or about $700,000 per year through taxation from mining-related activities. Musselshell County equalization taxes for schools are expected to average $1.7 million per year on the mine and coal production. Roundup would not appreciably benefit from direct taxes on the mine. Yellowstone County and Broadview schools are each expected to receive about $20,000 per year from the Project, primarily from taxable valuation on the loadout in Huntley and the rail spur.

The State of Montana would receive an estimated $2.6 million per year through taxes for statewide school equalization, coal severance tax, Resource Indemnity Trust Tax, and royalties paid for mining coal on State lands. The Federal government is projected to receive about $2.8 million per year through taxes related to the Black Lung Tax, Abandoned Mine Lands Tax, and royalties paid on coal mined on Federal properties.

In addition to taxes paid directly by the coal developer and transportation provider, new governmental revenues also would be realized through taxes on fuels used by trucks hauling coal to Huntley, and from payroll taxes on mining-related workers. Diesel fuel and gross vehicle weight (GVW) taxes should total $302,953 for the 2 years of hauling coal to Huntley (Don Cromer, Montana Department of Transportation, personal communication, November 18, 1991). Federal payroll taxes are expected to average $1.8 million per year (15 percent tax rate) and State payroll taxes should total $0.6 million per year (5 percent tax rate). In addition to payroll taxes, State and local governments also would benefit from individual taxes such as fees, fines, property taxes, and gambling revenues.

Costs for providing additional services for the projected in-migrating mine workers should be experienced by all governments in the area. The primary costs to Musselshell County are expected to be increased need for law enforcement, and operation and maintenance costs of Old Divide Road. However, increased tax revenues from the mine eventually should cover all increased Musselshell County costs from mine development and coal hauling. Roundup School districts and the city of Roundup are expected to experience minimal costs from adding services for the few families that are projected to move into the area.

Yellowstone County, the city of Billings, and Billings public schools have the capacity to accommodate the small number of projected in-migrating families, and should experience limited costs. The exception may be the additional costs expected for operation and maintenance of streets in Huntley. Rural school districts in Yellowstone County (Broadview, Shepherd, and Huntley), although presently at capacity and potentially overcrowded due to accreditation standards, also are projected to experience minimal costs related to the in-migrating workers and their families.

The primary increase in State expenditures due to mining-related activities would be the operation, maintenance, and potential reconstruction costs of U.S. Highway 87 and Highway 312 from coal hauling to Huntley. Estimates of increased maintenance and operations costs for the 2 highways are not available;

however, assuming average statewide maintenance revenue proportions, about $106,000 from the increased fuel and GVW should be available for maintenance. This would nearly double the present maintenance budget of the 2 highways. Pavement damage to the 2 roadways, due to projected coal hauling from the mine to Huntley, could total between $1.3 million and $2.0 million (Donald Cromer, personal communication, November 18, 1991).

Following closure of the mine, public sector fiscal conditions of local, State, and Federal governments should be negatively impacted at about the same rate as when the mine opened. Musselshell County and Roundup public schools would lose a valuable source of funding and their budgets would realize sizable declines in revenue. Other local governments should be slightly impacted from closure of the mine.

Cumulative activities should not impact public sector fiscal conditions of any governments in the area. Yellowstone County and associated governments have the infrastructure to accommodate in-migrating workers. Very few of the cumulative developments would use government services in Musselshell County, nor would they use the same roadway system as the proposed Project.

The Agency concludes that impacts to public sector fiscal conditions from mining-related activities would be major and beneficial to Musselshell County and minor and beneficial to Yellowstone County over the short term. Over the long term, impacts to public sector fiscal conditions are expected to be major and negative to Musselshell County and minor and negative to Yellowstone County.

c. Impacts to law enforcement agencies from mining-related activities.

Agencies responsible for law enforcement in Roundup, Broadview, Shepherd, Huntley, and Billings areas are currently understaffed. Additional traffic and criminal activity as a result of increased population from the proposed Project would stress law enforcement services in the area. Transport of coal by truck from the proposed mine to the Huntley loadout and the increased number of commuting vehicles on the highway would require additional traffic patrol and enforcement efforts. Due to the anticipated increase in traffic, officers may need to commit more time and resources to patrolling U.S. Highway 87 and Highway 312, requiring a shift in patrol duties from other portions of the County. After the rail spur was constructed, coal truck traffic would cease, thus alleviating a portion of the additional workload of traffic patrol officers.

When the mine closed, a small number of people would be expected to leave the area. If law enforcement agencies hired additional staff to meet the needs of the growing population and retained that level of staffing, it is unlikely that the agencies would be overstaffed.

Cumulative development (see Appendix B) primarily would be concentrated in the immediate Billings area; consequently, Musselshell and Yellowstone County Sheriff's departments should not be impacted by the proposed developments. Billings Police Department, which is currently understaffed, would be impacted by the influx of construction workers in the Billings area.

The Agency concludes that the impact to law enforcement agencies would be moderate when trucks were hauling coal between the proposed mine and Huntley loadout facility. For the remainder of the short term, the impact would be minor. Impacts to law enforcement agencies from mining-related activities would be negligible over the long term.

d. Impacts to housing in the Roundup and Billings areas from mining-related activities.

Rental housing in the Roundup area is limited; however, there are enough houses for sale to accommodate the small number of projected in-migrants to the area. Additional housing may become available for rent by those who have been unsuccessful in selling their homes.

The in-migration of workers may increase housing demand.

A large number of families moving from the area as a result of mine closure is not anticipated; therefore, it is not expected that the housing market would markedly change over the long term.

Cumulative development should not impact housing in the Roundup area. Temporary shortages of rental housing in the Billings area may be experienced due to cumulative development. Construction activities may last through the summer, a time when motels experience higher occupancy rates due to tourist travel. It is possible that construction workers occupying motel rooms over the construction phase would displace tourists seeking motel accommodations.

The Agency concludes that impacts to housing in the Roundup and Billings areas would be minor over the short term and negligible over the long term.

e. Impacts to educational facilities from mining-related activities.

Ninety new families are projected to move to the area as a result of the proposed mine development. School enrollment in the Roundup School District is expected to increase by 8 elementary and 4 high school students, while in the rural school districts of Broadview, Shepherd, and Huntley Project, school enrollment is projected to increase by a total of 4 elementary and 2 high school students. An increase of 38 elementary and 15 high school students is projected for the Billings School District.

The majority of in-migrating workers and their families are expected to reside in the Billings School District, which has the capacity to accommodate the small number of added students. Although few workers are expected to move to Roundup, Broadview, Huntley, or Shepherd, schools within these areas are currently at capacity and any additional students could further stress the facilities.

Accreditation standards, which would require smaller class sizes in kindergarten through second grade, will be implemented in 1992. With or without the Project, these standards may require additional educational facilities if newly-enrolled elementary students are not evenly distributed throughout elementary grades.

Positive impacts may result from approval of the Project. School districts within the coal-impacted area would have the opportunity to apply for grants for school facility expansion through the Local Impact Assistance Program of the Montana Coal Board. Approval of the grants would provide funding for expansion of school facilities.

Due to the small number of families expected to move away from the area after mine closure, negligible impacts on school districts should occur over the long term.

Cumulative development in the Billings area should not impact the school districts. It is expected that few in-migrating construction workers would bring their families with them to live for the short duration of construction activities. In addition, the largest portion of construction activities usually occurs during the warmer months of the year, a time when school usually is not in session.

The Agency concludes that impacts to educational facilities from mining-related activities would be moderate with the potential to become significant over the short term and negligible over the long term.

f. Impacts to social well-being in the Bull Mountains area from mining-related activities.

The magnitude of potential impacts on social well-being would depend on the ability of community members to adapt to social changes resulting from the proposed Project. Past history in the Roundup and Bull Mountains areas with cyclic resource developments such as coal, oil, forest products, and agriculture has imparted a social history of boom and bust. Due to this pattern of life, many social experiences necessary to deal with new development already exist.

Positive impacts to social well-being would be realized through increased job opportunities and local spending. However, since not all jobs created by the proposed Project would be filled by local residents and only a portion of the income would be spent locally, residents with high expectations that the Project would revitalize the area's depressed economy would experience disappointment if the Project failed to provide a large infusion of wages.

Residents who oppose the Project and associated rail spur would be adversely affected by its approval. These residents may experience feelings of anxiety., stress, and a perceived loss in quality of life. Those residents who established and joined grassroots organizations to oppose the Project probably would feel that their attempts had been futile.

Quality of life of Bull Mountains residents who live close to the proposed mine and associated rail spur would be adversely affected. Some residents moved to the Bull Mountains for solitude and they could be disturbed by the noise of construction and operation of the proposed mine and railroad; increased traffic as a result of hauling coal and commuters working at the proposed mine; increased dust created by mining construction and operation and traffic; and increased danger on the haul route due to the frequency in which coal trucks would be leaving and entering the proposed mine site.

Residents who gained economically as a result of the proposed Project would be the primary group impacted in the long term when mine closure eliminated direct or indirect economic benefits. Other groups should not be impacted by mine closure.

Cumulative development in the Billings area should not impact the social well-being of the Bull Mountain residents.

The Agency concludes that impacts to social well-being in the Bull Mountains area would be moderate with the potential to become significant over the short term and minor over the long term.

g. Impacts to social well-being in the Huntley area from operation of the loadout facility.

Operation of the proposed loadout facility would create additional dust, noise, and traffic and would increase the risk of traffic-related accidents. Currently, Huntley has a railroad stockpiling facility and experiences relatively large volumes of truck traffic, seasonally, during the sugar beet harvest. Some residents consider sugar beet traffic to be tolerable because it does not affect the community year-round, and labor and income associated with the beet harvest remains local. Year-round heavy traffic from coal hauling is widely perceived to represent a major change in the community with little local benefit. Similarly, little income would be generated for Huntley from the proposed loadout facility because truckers would probably reside elsewhere.

Closure of the Huntley loadout facility would be a positive impact on the social well-being of Huntley residents who opposed the proposed Project.

Cumulative development in the Billings area should not impact the social well-being of Huntley area residents.

The Agency concludes that impacts to social well-being in the Huntley area would be moderate with the potential to become significant over the short term and moderately positive over the long term.

12. Recreation

a. Impacts to outdoor recreational opportunities in the Bull Mountains area from mining-related activities.

Dispersed activities such as camping, fishing, and hiking would not be impacted by mining-related activities. Hunting however, may be temporarily disrupted due to noise, dust, and human activities associated with construction. Temporary displacement of some large game animals would be expected to occur, particularly near the surface facility complex, and along the rail spur during construction. This impact would be limited to those areas where hunting on private land was previously open to the public. Some displaced big game animals could relocate to State and Federal lands and actually increase hunting opportunities in some instances. In general, the impact to hunting would increase with proximity to active construction areas.

As areas of reclamation occurred, elk and deer would be attracted to them. In similar mining operations in Colorado and Wyoming, specially-designed wildlife fences have been constructed to keep deer off reclaimed areas (Bob Carroll, Ecological Consulting Services, Inc., personal communication, March 13, 1992.) Colstrip mine in southeastern Montana has documented problems with large numbers of mule deer trampling and grazing newly-reclaimed areas. Because hunting is usually restricted around a mine, reclaimed areas generally act as a reserve for animals (Bob Carroll, personal communication, March 13, 1992). As a result of probable increases in wildlife within restricted areas, peripheral hunting opportunities could increase. In addition, reseeding of the railbed after construction would attract deer and elk.

The Agency concludes that impacts to outdoor recreational opportunities in the Bull Mountains area from mining-related activities would be minor over the short term and negligible over the long term.

b. Impacts to outdoor recreational opportunities in the Huntley area from mining-related activities.

Recreation opportunities in Huntley would be impacted from coal dust generated at the loadout and carried to town by southeasterly winds. The quality of the recreation experience for those engaging in dispersed recreation activities including walking, jogging, and bicycling would be impacted during these times. The closer to the loadout these activities occurred, the greater the impact would be.

Increased coal truck traffic would impact the safety and general enjoyment of walkers, joggers, and bicyclists who used Heath Street for these activities. Impacts would be greatest in October when the sugar beet harvest peaks. During this time, both coal and beet trucks entering Huntley from the north would be using Heath Street. Due to the existing traffic load on Old Highway 10 - Northern Avenue, most Huntley residents do not use it as a recreation route (Jim Pope, personal communication, January 30, 1992.)

Noise impacts would be greatest within 30 to 40 feet of Heath Street and 1,000 feet of the loadout (see Noise). Beyond that distance, noise generated at the proposed coal loadout would decline to a level compatible with outdoor recreation activities. Huntley Community Park, located about 1,000 feet southwest of the proposed coal loadout is at the outer limits of the acceptable range; recreation activities should not be affected.

The Agency concludes that impacts to outdoor recreational opportunities in the Huntley area from operation of the Huntley loadout would be minor over the short term and negligible over the long term.

13. Land Use

a. Impacts to land use in the life-of-mine area from mining-related activities.

- Cropland/Rangeland

  Construction and mining-related activities (primarily subsidence) could progressively disturb 7,041 surface acres of the life-of-mine area. Native grasses, shrubs, and trees would be planted in disturbed areas to restore rangeland. The 17-acre parcel of cropland in the northwest portion of the life-of-mine area may be temporarily disturbed by surface facility construction activities. Disturbed areas should return to equal or better than premining production capacity.

Surface disturbances caused by subsidence should be temporary (1 to 2 years); the possible exception would be any edge-of-subsidence areas where steep slopes created or worsened by subsidence could decrease soil stability and increase the chance of erosion.

The surface of the WDA fill area would remain active for the life-of-mine and therefore, unusable during that time period. After total reclamation, the WDA area should be suitable for use as rangeland.

Water resources at 42 of the 49 springs in the life-of-mine area could be disrupted by mining-related activities (tables III-3 and E-8, Appendix E). Impacts to these resources would be mitigated through the use of interim water supplies, repair of shallow surface fractures, horizontal drains, vertical wells, guzzlers, ponds (reservoirs), and/or supplementation using water distribution systems (Table A-3, Appendix A). Of the 4 springs having a high importance to land use, 2 are predicted to undergo a major impact from subsidence and 2 are predicted to sustain subsidence-induced impacts that have the potential to become major. Of the 14 springs with moderate importance to land use, 2 are predicted to undergo a major impact from subsidence and 2 are predicted to sustain an impact that has the potential to become major (see Table E-8, Appendix E).

- Buildings

Buildings located in areas of subsidence could suffer structural damage. Once subsidence had ended, the surface should have adequate stability for construction or reconstruction of most buildings, except for steep slopes where stability would remain questionable.

The WDA would not be suitable for building during the life-of-mine because of continual use; however, once mining operations ceased and reclamation of the WDA was completed, it should be suitable for construction of most buildings, except where the face of the fill area was too steep.

- Corrals/Fencing

Corrals and fences located in areas of subsidence could be damaged to varying degrees, depending on the amount of subsidence. Once subsidence had ended and reclamation was completed, they could be repaired or rebuilt.

Corrals and fences in areas disturbed by construction activities would be removed and could be rebuilt once reclamation activities were completed.

Fences or corrals could be built in the WDA once waste disposal use of the area ended and reclamation was completed.

- Roads

  Roads located in areas of subsidence would be damaged to varying degrees, depending on the amount of subsidence.

  Surface disturbance, caused by construction activities or subsidence could require that affected roads be relocated or temporarily closed during the period of disturbance. Fattig Creek Road would remain open, providing access through the life-of-mine area. (Sections may be relocated.) Meridian has an agreement with Musselshell County that Meridian would maintain and/or rebuild roads within the life-of-mine area. Once subsidence had ended and disturbed surface areas were reclaimed, roads would be rebuilt.

- Future Development

  A portion (438 acres) of the Yellowstone Basin Properties, Inc. subdivision is located in the north portion of the life-of-mine area, north and west of Fattig Creek. There is no plan to mine this area, therefore continued residential development and use of the subdivision area would not be affected by subsidence or other mining-related activities.

  Land within longwall subsidence areas should generally be suitable for future construction of dwellings or other types of development once subsidence had ended and reclamation was completed. An exception would be those areas where stability would continue to be questionable because of severe slopes.

  Land within the room-and-pillar area (about 240 acres in the south portion of the life-of-mine area) may experience some long-term settling. Because of this potential settling, stability required for structural construction may be affected, thereby impacting future development of this particular area.

  After total reclamation of the WDA had been completed, the surface should be suitable for development, except for the face of the fill area which would be too steep.

  Proposed mitigation measures for the life-of-mine area including topsoil placement or replacement, compaction, hydrologic mitigation, and revegetation are described in Reclamation Plan, Appendix A.

The Agency concludes that impacts to land use other than those associated with springs would be moderate over the short term and minor over the long term.

The Agency concludes that impacts to land use associated with springs in the life-of-mine areas from mining-related activities would be minor to moderate over the short term and minor over the long term.

b. Impacts to land use along the rail spur from construction and operation activities.

- Cropland/Rangeland

  Land traversed by the proposed rail spur right-of-way is primarily cropland or rangeland. Parcels would be split by the right-of-way and land within the right-of-way would be taken out of production (about 1,150 acres outside the life-of-mine area). Proposed road crossings and cattle underpasses would decrease the impact of split parcels in most instances and indirect access from parcel to parcel would cause inconvenience.

  There appear to be 3 parcels that would be split. These are located in section 6, T.4 N., R.25 E. (owners: G.L. and O.J. Morton); N½ Section 1, T.5 N., R.26 E. (owner: Majerus Ranch, Inc.); and S½ Section 1, T.5 N., R.26 E. (owners: G.A. and E.L. Carlson).

- Corrals/Fences

  Fencing would be installed along both sides of the rail spur right-of-way and existing fences removed and/or repaired as required to maintain safety and land use functions.

- Roads

  The proposed rail spur would cross numerous local and County roads and 2 highways. Plans for the proposed rail spur show about 22 crossings of local and County roads. Three of the crossings would be above-grade, the remainder would be at-grade crossings. Montana Route 3 would have an at-grade crossing and U.S. Highway 87 would have an above-grade crossing.

  Once mining operations had ceased, the track was removed, and reclamation completed, direct access between split parcels could be re-established.

- Future Development

  On non-State-owned sections, only limited backfilling and regrading of the railbed is planned and revegetation would be limited to reseeding disturbed areas with crested and intermediate wheatgrass. Re-establishment of shrub and tree communities would be left to natural invasion. On State-owned sections, complete reclamation including regrading to approximate original contours and revegetation to restore the areas to their premine function, would be required.

  The rail spur right-of-way would be too narrow to be effectively developed in and of itself. Some of the divided parcels are also so small that they would not be economically developable. These impacts would remain so long as the rail spur right-of-way was a separate, individual parcel of land.

The Agency concludes that the impacts to land use along the rail spur from construction and operation activities would be moderate in the short and long terms. The loss of agricultural productivity as well as other economic development of the 1,150 acres of rail spur right-of-way could be irretrievable.

14. Visual Resources/Aesthetics

a. Impacts to visual resources/aesthetics in the life-of-mine area from mining-related activities.

The only area with a high sensitivity level near the life-of-mine area is the U.S. Highway 87 corridor. The corridor is highly sensitive because of its high traffic volume. All other areas have a low sensitivity level because of the sparsely-developed nature and low user volume.

During construction, diesel emissions and dust from startup and operation of vehicles and other construction activities would create some haze. However, watering surface construction areas to control the dust, topographic features that screen the mine from areas of high sensitivity, and distance (U.S. Highway 87 is over 1 mile away from the life-of-mine area at its closest point) would limit visual impact. The duration of construction impacts would be temporary.

During operation of the mine, diesel emissions from the startup and operation of vehicles would create some haze. Topographic screening and distance to any highly-sensitive areas would limit the visual impact from this source. Particulate emissions generated by screening, crushing, conveyance, and cleaning operations would be controlled by fabric filters, water sprays, partially enclosed conveyors, and tube stackers. Any coal fires would be promptly extinguished.

There would be several mine-related surface facilities and disturbances that would, to some degree, adversely impact the aesthetic quality of the existing landscape. The PM Mine and Meridian coal test pit have already scarred a portion of the life-of-mine area. Located on about 871 acres, surface facilities would include the main facilities buildings, coal processing facilities, and ancillary facilities. These surface facilities would be removed and the area reclaimed after mining operations had ended. Surface disturbances at the mine include topsoil stockpiles, excess spoil pile, sediment ponds, rock quarry, haul roads, WDA, WDA subsoil pile, and subsidence areas. Subsidence would have the potential to disturb about 6,170 acres of the life-of-mine area. The most substantial surface disturbance would be caused by the WDA, which would cover up to 169 acres and reach a maximum height of 130 feet. Reclamation measures have been proposed that would reduce the long-term impacts of mining-related surface facilities and disturbances, but not totally mitigate them. Some would permanently scar the landscape.

The WDA's surface would remain virtually flat and the face of the fill would have an unnatural uniform slope that would strongly contrast in form and line with the adjacent landscape. Proposed regrading techniques may not leave a topographically-natural appearing landscape, and tree and shrub plantings may not insure that natural vegetation patterns would be duplicated (see Figure A-11, Appendix A). In general, revegetation, especially trees, would take a long period of time to achieve a natural appearance that would blend with vegetation in adjacent areas undisturbed by mining-related activities.

Mining-related surface facilities and surface disturbances would be screened from highly sensitive viewpoints by topographic features. They would be partially visible from some existing residences and local roads adjacent to the life-of-mine area.

The Agency concludes that impacts to the visual resources/aesthetics in the Bull Mountains area from mining-related activities would be minor to moderate in the short and long terms. The visual contrast of the WDA would constitute an irretrievable and irreversable commitment of the visual resources/aesthetics.

b. Impacts to visual resources/aesthetics in the Bull Mountains area from the rail spur.

There are 2 areas with a high sensitivity level in the rail spur viewshed; Montana Route 3 and U.S. Highway 87 corridors. These corridors are highly sensitive because of their high traffic volumes. All other areas have a low sensitivity level because of sparse development and low user volumes.

During construction, diesel emissions and dust from startup and operation of vehicles and other construction activities would create some haze. Additionally, most of the rail spur would be screened from highly-sensitive viewpoints by topographic and vegetative screening. The duration of construction impacts would be temporary.

During operation of the mine, both the rail spur and coal trains would adversely affect the visual resources/aesthetics of the area. The proposed right-of-way would come within 300 to 400 feet of 2 ranch houses, and within one-fourth to one-half mile of several others.

The railbed, extensive cuts-and-fills, County road above-grade crossings, and livestock underpasses would be visible during and after the mine life. All are proposed to remain in-place after the rail spur was abandoned. The proposed revegetation of the rail spur would not match or blend with existing, adjacent vegetation, thereby contrasting in color and texture. Large cuts (some more than 60 feet), with slopes of 2:1 and 3:1, are planned for sections of the eastern one-third of the rail spur. The proposed above-grade crossings would have clearances ranging from 26 to 31 feet high, and would be 140 to 180 feet long. The postmining landscape along the rail spur would be permanently impacted if these features remained in place as proposed. Most of these features would be visible only from viewpoints with low visual sensitivity levels, however, some would be visible from the corridors of U.S. Highway 87 and Montana Route 3 which would have high visual sensitivity levels.

The proposed U.S. Highway 87 above-grade rail crossing would be located in a scenic area of rolling, wooded (pine) hills. The top surface of the bridge would be about 30 feet above U.S. Highway 87. The fill slope for the rail spur east of the highway would exceed 50 feet. The grey concrete of the structure would not blend with or compliment the natural colors of the surrounding area. This would be a massive structure, sharply contrasting with the color, form, line, and texture of the adjacent landscape. The bridge would cross a straight section of highway with long sightlines from both the northbound and southbound lanes. This would make it easily visible from relatively long distances. There are no plans to remove the structure after mine life, therefore the visual resources and aesthetic value of the area would be permanently impacted.

Although only causing temporary impacts, coal trains would be very visible especially in the western two-thirds of the rail spur where the landscape is flat and open. Coal trains sitting on the 6,800-foot siding at the junction of the rail spur and Burlington Northern mainline would be immediately adjacent to Montana Route 3 and very visible, and could possibly be visible from portions of Broadview. Trains presently run through the Broadview area on the Burlington Northern mainline.

The Agency concludes that impacts to the visual resources/aesthetics in the Bull Mountains area from the rail spur would be minor to moderate over short and long terms. The larger cuts-and-fills of the rail spur and the structure over U.S. Highway 87 would constitute irretrievable commitments of visual resources/aesthetics.

c. Impacts to visual resources/aesthetics in Huntley from the Huntley loadout.

Huntley would have a high level of sensitivity because of population density, closeness, and unobstructed views of the proposed loadout facility and operations. Highway 312 would also have a high sensitivity level, although impacts would be lessened by distance (about one-half mile from loadout site) and line-of-sight interference (trees and buildings).

During construction, diesel emissions and dust from the startup and operation of vehicles and other construction activities would create some haze. Watering construction areas to control dust would help reduce the visual impact.

Although located in a rail-oriented industrial area, the proposed facilities and operational activities will lower the scenic quality, increasing the impact created by the existing facilities including the grain elevator, sugar beet stockpile and loading site, and other trains using Montana Rail Link line.

Additional adverse impacts to visual resources and aesthetics would be created by coal trains, haul trucks, and loadout equipment. Each would create dust and particulate emissions as well as adding to the visual clutter. Coal dust emissions were a major complaint of Huntley residents during operation of the loadout related to the Meridian coal test pit. Water spraying and partial enclosure of transfer operations should help reduce coal dust emissions.

The coal stockpile, a dominating feature (which could be 600 feet long, 200 feet wide, and 25 feet high), would greatly impact the aesthetic quality of the area because of its strong contrasts in form, color, and texture to the surrounding landscape. The 8-foot fence proposed to enclose the stockpile would do little to mitigate its visual impact.

The Agency concludes that impacts to visual resources/aesthetics in Huntley from Huntley loadout would be major and significant in the short term, and negligible in the long term.

15. Cultural Resources

a. Impacts to prehistoric and historic resources in the Bull Mountains area from mining-related activities.

Potential adverse effects to prehistoric and historic resources include direct land disturbance due to construction and operations (including subsidence), and unauthorized artifact collecting and vandalism. Degradation of physical integrity occurs at sites exposed to these activities. The loss of physical integrity diminishes research potential which contributes to resource eligibility. Visual intrusions to the setting or environmental context of sites also creates potential adverse effects.

Two NRHP-eligible sites currently identified within the life-of-mine area would be adversely affected by mining and mining-related activities. Four NRHP-eligible lithic scatters may be adversely affected by subsidence, resulting in the mixing of subsurface cultural deposits located at the margins of the subsidence areas. One NRHP-eligible lithic scatter may be adversely affected by construction of the proposed rail spur within the proposed surface facility complex. The potentially NRHP-eligible stone circle site may be adversely affected by construction of hydrological mitigation in the proposed life-of-mine area. About 230 additional NRHP-eligible prehistoric sites may be disturbed during construction and operation of the mine.

Twenty-four NRHP-eligible prehistoric and historic sites located in the proposed rail spur right-of-way, would be adversely affected by railroad construction or operations. Thirteen prehistoric lithic scatters and 11 historic sites (8 homesteads and 3 trash scatters) would be disturbed or destroyed by construction of the proposed rail spur. Two of these homesteads have standing structures. These would also be adversely affected by the presence of the rail spur which would destroy the integrity of site settings. Increased access and traffic to the area by construction workers may also result in unauthorized surface collecting and vandalism of NRHP-eligible sites.

Adverse effects to NRHP-eligible prehistoric and historic sites from mining-related activities would be appropriately mitigated by data recovery techniques. Data recovery may include surface collection, excavation, artifact and feature analysis, architectural documentation, archival research, and construction or operations monitoring. Beneficial impacts may occur from data recovery procedures implemented to mitigate adverse effects to NRHP-eligible sites. Data recovery of NRHP-eligible sites would contribute pertinent information to the regional database.

The Agency concludes that impacts to prehistoric and historic resources in the Bull Mountains area from mining-related activities would be minor and permanent. Loss of NRHP-eligible prehistoric and historic sites would be irretrievable.

b. Impacts to Native American (traditional) resources in the Bull Mountains area from mining-related activities.

Potential adverse effects to Native American resources include direct land disturbance due to construction and operations (including subsidence), visual and noise intrusions on Native American sensitive sites, reduced access to Native American traditional use areas, and unauthorized artifact collecting and vandalism.

Rock art sites sensitive for Native American groups in the proposed life-of-mine area may be disturbed by subsidence; it may cause scaling and collapse of vertical sandstone outcrops within subsidence areas. Springs may be disturbed or destroyed by construction of wetland enhancement and hydrological mitigation. Other types of sensitive sites may be disturbed directly by construction, or indirectly by visual or noise intrusions from construction and operation of the mine.

Several potentially-sensitive areas within the proposed railroad corridor may be disturbed directly by construction, or indirectly by audio or noise intrusion of rail spur construction and operations.

Impacts to Native American resources may be mitigated by appropriate relocation of human remains (if discovered) according to the Native American Graves Protection and Repatriation Act and the Montana Human Skeletal Remains and Burial Site Protection Act. Reseeding, transplanting, or harvesting sensitive Native American plant resources (if present), or planting vegetation screens to reduce visual and noise intrusions would also provide mitigation. Impacts to some Native American resources, such as sensitive rock art sites, cannot be adequately mitigated, resulting in destruction of the resource.

The Agency concludes that there will be some impacts to Native American resources in the Bull Mountains area from mining-related activities. Because there may be unmitigated and irretrievable loss of some resource types, the impact to Native American resources would have the potential to become significant.

B. IMPACTS OF DISAPPROVAL UNDER ALTERNATIVE 2

1. Assumptions for the Disapproval Alternative

The assumptions used by the Agency to perform the impact analysis for the disapproval alternative (Alternative 2) include:

- The Project would be placed on indefinite hold, and the permit application package (PAP) submitted to Montana DSL would be withdrawn.

- The existing Huntley loadout facility would be reclaimed as scheduled in the approved Meridian coal test pit permit, no. 90017R. This would include: removal of the portable loadout facilities, collection of the remaining coal waste for disposal at the Bull Mountains test pit, and reclamation of the sediment pond after evaporation was complete. (Specific details of the existing Huntley loadout facility are included in Appendix B.)

- Reclamation of Meridian's existing coal test pit would proceed according to the approved plan (MT permit no. 90017R). (Specific details of the existing coal test pit facility are included in Appendix B.)

- The PM Coal Company would continue to operate their existing surface/underground mine in the Bull Mountains area according to the approved permit to mine coal (MT permit no. 79008RI). They would continue to supply truck/package-delivery coal to the local market. (Specific details of the existing PM Mine are included in Appendix B).

- Existing resources in proximity to the Project would not be disrupted by new activity related to coal mining. They would, however, be subject to the continuing human and natural processes, including those uses and management activities currently being applied. To accurately evaluate the impacts of disapproving proposed mining-related activity on these resources, analysis of impacts under this alternative examine, to the extent possible, the effects of current management and natural processes on existing resources through the year 2037, the year assumed for final bond release (1993, plus 44 years).

- The life-of-mine area and associated rail spur would be managed for grazing, agricultural crop production, wildlife habitat, and recreation:

    - Livestock stocking rates and management practices would continue at current, premining levels.

    - Wildlife management and recreation opportunity would correspond to Montana Department of Fish, Wildlife and Parks (DFWP) plans for the area.

    - Cropland would continue to be farmed at current, premining levels.

- The area surrounding the Project would be maintained in its current or proposed use:

    - Coal leasing may continue, but no new mines would be developed.

    - Land currently used for agriculture would remain in that use.

    - Land outside the area of the proposed mine, currently used for residential purposes, would remain in that use. New residential development could occur.

    - State and County roads would be subject to existing maintenance schedules and current use levels.

2. Air Quality

a. Impacts to air quality in and around the surface facility complex associated with disapproval of the proposed Project.

Current air quality impacts would continue to be the result of fugitive dust and vehicle exhaust emissions from operation of the PM Mine. The area should continue to be classified as in attainment for all regulated pollutants.

The Agency concludes that impacts to air quality in and around the surface facility complex associated with disapproval of the proposed Project should be negligible.

b. Impacts to air quality along and around the rail spur associated with disapproval of the proposed Project.

Fugitive dust and vehicle exhaust emissions from agricultural operations and vehicle travel on local roadways would continue to generate air quality impacts. Regular train traffic would continue to pass through the Broadview area, generating diesel emissions. The area along the rail spur right-of-way should continue to be classified as in attainment for all regulated pollutants.

The Agency concludes that impacts to air quality along and around the rail spur associated with disapproval of the proposed Project should be negligible.

c. Impacts to air quality from truck haulage of coal on U.S. Highway 87, Highway 312, and Heath Street.

Re-entrained dust and exhaust emissions from vehicular traffic should continue to constitute the sources for air quality impacts along U.S. Highway 87, Highway 312, and Heath Street. The area along these roadways should continue to be classified as in attainment for all regulated pollutants. However, in 1993 reconstruction of 6.2 miles of U.S. Highway 89 is scheduled several miles south of the south entrance to Old Divide Road. During this 1-year reconstruction period, ambient fugitive dust (PM_{10}) concentrations and NO_2, CO, and particulate concentrations from exhaust emissions would show temporary increases along this portion of U.S. Highway 87.

The Agency concludes that impacts to air quality from truck haulage of coal on U.S. Highway 87, Highway 312, and Heath Street should be negligible to minor.

d. Impacts to air quality in and around the Huntley area associated with disapproval of the proposed Project.

Air quality impacts from fugitive dust and vehicle and locomotive exhaust emissions should continue as a result of regular train traffic and operational activities at the Huntley sugar beet loading site. The Huntley area should continue to be classified as in attainment for all regulated pollutants.

The Agency concludes that impacts to air quality in and around the Huntley area associated with disapproval of the proposed Project should be negligible.

3. Geology

a. Impacts to stability of slopes and sandstone cliffs in and around the life-of-mine area associated with disapproval of the proposed Project.

Natural erosion and weathering will continue to occur with slope failure and rock toppling altering topography and drainage patterns in the area.

The Agency concludes impacts to the stability of slopes and sandstone cliffs in and around the life-of-mine area associated with disapproval of the proposed Project would be negligible.

4. Topography

a. Impacts to topography of the surface facility complex associated with disapproval of the proposed Project.

Reclamation of Meridian's coal test pit would proceed according to the approved plan and the PM Mine would continue to operate according to an approved permit. With reclamation complete, postmining and test pit topography would be similar to adjacent premining topography.

The Agency concludes that impacts to topography of the surface facility complex associated with disapproval of the proposed Project would be negligible.

b. Impacts to topography in and around the life-of-mine area associated with disapproval of the proposed Project.

Natural processes and current management would continue to determine topographic changes in the area.

The Agency concludes that impacts to topography in and around the life-of-mine area associated with disapproval of the proposed Project would be negligible.

c. Impacts to topography along the rail spur associated with disapproval of the proposed Project.

The 33-mile right-of-way would continue to be managed for grazing, crop production, wildlife habitat, and recreation. Natural processes and current management would continue to determine topographic changes in the area.

The Agency concludes that impacts to topography along the rail spur associated with disapproval of the proposed Project would be negligible.

5. Soils

a. Impacts to soil productivity associated with disapproval of the proposed Project.

The Huntley loadout and coal test pit would be reclaimed according to approved plans. The PM Mine would continue to operate, and land in and around the proposed mine would be maintained in current or proposed uses.

The Agency concludes that impacts to soil productivity associated with disapproval of the proposed Project would be negligible.

6. Hydrology

a. Impacts to ground and surface water supplies in and around the life-of-mine area associated with disapproval of the proposed Project.

Ground water and related surface water supplies would continue to be determined by climate, recharge, and natural structural changes in area.

The Agency concludes that impacts to ground and surface water supplies in and around the life-of-mine area associated with disapproval of the proposed Project would be negligible.

b. Impacts to water quality in and around the life-of-mine area associated with disapproval of the proposed Project.

The quality of ground and surface water from spring and seep discharges, would continue to be determined by natural chemical and structural processes in the area.

The Agency concludes that impacts to water quality in and around the life-of-mine area associated with disapproval of the proposed Project would be negligible.

c. Impacts to ground water supplies in and around the life-of-mine area associated with disapproval of the proposed Project.

Ground water supplies in deep aquifers would be impacted only by wells drilled for future development.

The Agency concludes that impacts to ground water supplies in and around the life-of-mine area associated with disapproval of the proposed Project would be negligible.

d. Impacts to ground and surface water quality in sections 12 and 13 associated with disapproval of the proposed Project.

Natural chemical and structural processes in the area would continue to determine the quality of ground and surface water in sections 12 and 13.

The Agency concludes that impacts to ground and surface water in sections 12 and 13 associated with disapproval of the proposed Project would be negligible.

e. Impacts to ground water quality in the Huntley area associated with disapproval of the proposed Project.

The existing Huntley loadout would be reclaimed as planned. Because the facility is located in a commercial/industrial area, future uses could impact ground water quality.

The Agency concludes that impacts to ground water quality in the Huntley area associated with disapproval of the proposed Project would be negligible.

f. Impacts to alluvial ground water supplies in the Huntley area associated with disapproval of the proposed Project.

The existing Huntley loadout would be reclaimed as planned, and operations of the water supply well would depend on the future use of the site.

The Agency concludes that impacts to alluvial ground water supplies in the Huntley area associated with disapproval of the proposed Project would be negligible.

7. Vegetation

a. Impacts to wetland communities in and around the life-of-mine area associated with disapproval of the proposed Project.

Precipitation-dependent wetland communities throughout the area should continue to fluctuate in response to annual moisture patterns and continue to be susceptible to damage from wild and domestic animal grazing and watering.

The Agency concludes that impacts to wetland communities in and around the life-of-mine area associated with disapproval of the proposed Project would be minor.

b. Impacts to wetland communities along the rail spur associated with disapproval of the proposed Project.

The 1-acre precipitation-dependent wetland community in the right-of-way would not be disturbed and would continue to fluctuate in response to annual moisture patterns. New wetland communities would not be established along the proposed rail right-of-way.

The Agency concludes that impacts to wetland communities along the rail spur associated with disapproval of the Project would be negligible.

c. Impacts to the vegetative productivity and community stability along the powerline easement and rail spur associated with disapproval of the proposed Project.

Subdivision of real estate in the Bull Mountains would continue along with extreme overgrazing of some parcels. Increased population levels in the Bull Mountains could require powerline upgrading with or without the proposed Project. Grazing by domestic and wild animals would continue in the Bull Mountains, subject to landowner discretion. Vegetation productivity and stability along the proposed rail spur right-of-way could change radically upon termination of the Federal Conservation Reserve Program.

The Agency concludes that impacts to vegetative productivity and community stability along the powerline easement and rail spur associated with disapproval of the Project would be negligible to minor.

d. Impacts to vegetative productivity and community stability within the surface facility complex and the Huntley loadout associated with disapproval of the proposed Project.

The PM Mine would continue to operate within the terms of its permit and the 101 acres of existing disturbance eventually would be reclaimed. Vegetation productivity of the area would be a function of annual precipitation and landowner management practices. Huntley loadout would remain as a commercial/industrial use area (see Appendix B) after reclamation of the existing pond according to the current permit.

The Agency concludes that impacts to vegetative productivity and community stability within the surface facility complex and Huntley loadout associated with disapproval would be negligible.

8. Wildlife

a. Impacts to tree- and cavity-nesting birds in and around the life-of-mine associated with disapproval of the proposed Project.

Tree- and cavity-nesting birds have an abundance of nesting habitat in the Bull Mountains, both within the life-of-mine area and around it. One hundred-one acres of the surface facility complex is already disturbed by PM Mine, and would be returned to usable habitat under the terms of the present permit.

The Agency concludes that impacts to tree- and cavity-nesting birds in and around the life-of-mine area associated with disapproval of the proposed Project would be negligible.

b. Impacts to sharp-tailed grouse nesting and brood-rearing habitat, turkey-roosting habitat, and mule deer winter range at the WDA associated with disapproval of the proposed Project.

The existing ponderosa pine-mixed grassland of the WDA sites would not be disturbed, and would continue to be used by sharp-tailed grouse for nesting and brood rearing, by wild turkeys for roosting, and by mule deer in winter.

The Agency concludes that impacts to sharp-tailed grouse nesting and brood-rearing habitat, turkey-roosting habitat, and mule deer winter range at the WDA associated with disapproval of the proposed Project would be negligible.

c. Impacts to elk, deer, and antelope in the Bull Mountains area from increased human activity and development associated with disapproval of the proposed Project.

Proliferation of small housing tracts in the Bull Mountains could be a greater deterrent to some wildlife species, such as elk and deer, than a single larger block of human activity. Subdivisions could increase over a wider area. Twenty-acre homesteads, with associated domestic pets and daily traffic, influence wildlife in an area exceeding 20 acres. Assured water sources for wildlife associated with hydrologic mitigation would not be provided.

The Agency concludes that impacts to elk, deer, and antelope in the Bull Mountains area from increased activity and development associated with disapproval of the proposed Project would be negligible.

d. Impacts to the wildlife productivity within the life-of-mine area associated with disapproval of the proposed Project.

Current wildlife productivity is largely a function of weather (precipitation) patterns, grazing and foraging competition with livestock, and tolerance of landowners for specific species. Certain species also have limited tolerance for human activity. Increased subdivision would continue to affect wildlife. Wildlife populations and distribution would continue similar to present levels, affected primarily by landowner tolerance.

The aquatic animal community in the life-of-mine area would continue to be controlled by the fluctuations in the status of aquatic habitat provided by springs, seeps, and rainfall.

The Agency concludes that impacts to wildlife productivity within the life-of-mine area associated with disapproval of the proposed Project would be negligible.

9. Transportation

a. Impacts to traffic flow and public safety associated with disapproval of the proposed Project.

Truck and other vehicle trips generated by the PM Mine would continue to use Fattig Creek Road, Old Divide Road, and U.S. Highway 87. These vehicles would use a portion of the capacity of the area roadways and intersections.

Traffic volumes should continue to grow with general population increases in the area. More traffic volume and more vehicle-miles of travel would gradually reduce the LOS on area roadways and increase the number of accidents.

Traffic turning from either of the Old Divide Road/U.S. Highway 87 intersections onto U.S. Highway 87 would continue to yield to through traffic. Longer delays would occur at the intersections as a result of both traffic growth on U.S. Highway 87 and the PM Mine trucks turning to and from Old Divide Road. As delays increased, the LOS of the intersections would decrease.

More accidents would occur at the intersections of Old Divide Road with U.S. Highway 87. More vehicles and longer delays in traveling through the intersection would increase the potential for conflicts.

Truck travel along U.S. Highway 87 would slow when going up long, steep grades and would continue to impede traffic. Continued traffic measures combined with the slow trucks could lower the LOS of highway segments and cause more accidents.

Congestion due to highway reconstruction projects on U.S. Highway 87 would occur as vehicles traveled through highway work zones. The number of accidents would increase as vehicles stopped at the reconstruction sites. Reconstruction projects would result in a better roadway surface and shoulders and increase the traffic capacity and safety of the roadway.

The U.S. Highway 87/Highway 312 intersection would continue to be congested during the peak hours of travel. As traffic growth continued, congestion would worsen, reducing both the capacity and LOS of the intersection. Large trucks would continue to have a difficult time turning at the intersection and could further reduce its capacity and LOS. More traffic accidents would occur due to increased traffic and vehicle delays and stops.

The seasonal sugar beet traffic would continue to use Highway 312 and Heath Street to get to the Huntley stockpile facility (see Appendix B). The LOS of the Highway 312/Heath Street intersection could become worse during the short duration of sugar beet deliveries due to continued growth of traffic in the area. More traffic accidents would occur at the intersection due to the increased traffic and vehicle delays and stops.

The number of vehicle trips generated by residents along Heath Street is low. The continuation of sugar beet traffic along this road should create few conflicts and little congestion. Sight distance is good, so cars traveling in the Heath Street area would have adequate resources to avoid accidents with the sugar beet traffic.

The Agency concludes that impacts to traffic flow and public safety associated with disapproval of the proposed Project would be minor.

b. Impacts to traffic flow and public safety on public and private roads between U.S. Highway 87 and Montana Route 3 associated with disapproval of the proposed Project.

Traffic should continue to grow as the general population increases in the area. More traffic would reduce the capacity and potentially increase the number of accidents on public and private roadways between U.S. Highway 87 and Montana Route 3.

County and private roadways between U.S. Highway 87 and Montana Route 3 have low traffic volumes. Increased traffic could reduce the available capacity of these roadways. More traffic accidents would occur along these roadways and at intersections due to the increased traffic volumes.

Congestion due to highway reconstruction projects would occur. More stops and delays would be experienced as increased numbers of vehicles traveled through work zones. Completion of the reconstruction projects would result in a better roadway surface, better shoulders, and increased traffic capacity and safety of the roadway.

The Agency concludes that the impacts to traffic flow and public safety on public and private roads between U.S. Highway 87 and Montana Route 3 associated with disapproval of the proposed Project would be negligible.

c. Impacts to the integrity/stability of County and State roads associated with disapproval of the proposed Project.

Traffic volumes should continue to grow as general population increases in the area. This growth would include automobile and heavy vehicle trips. Truck and vehicle trips generated by the PM Mine would continue to use Fattig Creek Road, Old Divide Road, and U.S. Highway 87. Seasonal sugar beet traffic would continue to use Heath Street and Highway 312.

The volume and makeup of this traffic would generate normal wear on the area road surfaces. This would increase the occurrence of pavement surface and structural failures. The continued growth of traffic on area roads would require increased maintenance and costs.

The continued travel of PM Mine coal trucks on Fattig Creek and Old Divide roads, and sugar beet trucks on Heath Street would continue to degrade road surfaces and structures. Pavement cracking, breakup, potholes, and rutting could be expected.

The Agency concludes that impacts to the integrity/stability of County and State roads from disapproval of the proposed Project would be minor.

d. Impacts to the integrity/stability of County roads from mining-related subsidence associated with disapproval of the proposed Project.

PM Mine would continue to operate within its permitted boundaries. Mining-related subsidence could result in settling of a small section of Fattig Creek roadbed. Subsidence could cause both travel surface and pavement structure failures.

The Agency concludes that impacts to integrity/stability of County roads from mining-related subsidence associated with disapproval of the proposed Project would be negligible.

10. Noise

a. Noise impacts in the Bull Mountains area associated with disapproval of the proposed Project.

Operation of the PM Mine would continue to produce noise levels that are currently experienced in the area. These levels range from about 40 to 72 dBA.

The Agency concludes that noise impacts in the Bull Mountains area associated with disapproval of the proposed Project would be negligible.

b. Noise impacts along the rail spur associated with disapproval of the proposed Project.

Along the proposed rail spur right-of-way, noise levels would remain near current levels. These levels range from 55 to 58 dBA at 1,000 feet from noise sources. In the Broadview area, noise levels would continue to be influenced by Burlington Northern train traffic passing through the area.

The Agency concludes noise impacts along the rail spur associated with disapproval of the proposed Project would be negligible.

c. Noise impacts along the proposed coal transport route associated with disapproval of the proposed Project.

Noise levels along the proposed coal transport route would remain near current levels (i.e., L_{dn} values of 59 dB at a distance of 100 feet from roadways). However, in 1993, reconstruction of 6.2 miles of U.S. Highway 87 is scheduled. During the 1-year reconstruction period, noise levels would increase above current levels along this portion of the highway.

The Agency concludes that noise impacts along the proposed coal transport route associated with disapproval of the proposed Project would be negligible to minor.

d. Noise impacts in the Huntley area associated with disapproval of the proposed Project.

Noise levels in the Huntley area would remain at current levels. L_{dn} values would continue to range from 50 to 55 dBA at residences 100 feet from Heath Street and Northern Avenue. The normal train traffic and the operation of the beet-loading site during the period from October through January, would continue to cause local increases in noise levels.

The Agency concludes that noise impacts in the Huntley area associated with disapproval of the proposed Project would be negligible to minor.

11. Socioeconomics

a. Impacts to employment, personal income, and population associated with disapproval of the proposed Project.

Employment, personal income, and population should increase at rates as described in Chapter III. Local governments, businesses, and residents would not benefit from the projected increase in income and employment opportunities associated with construction and development of the Project.

The Agency concludes that in foregone benefits, impacts on employment, personal income, and population associated with disapproval of the proposed Project would be moderate and negative in Musselshell County and minor and negative in Yellowstone County.

b. Impacts to public sector fiscal conditions associated with disapproval of the proposed Project.

Public sector fiscal conditions should remain at their present level of service as described in Chapter III. Local governments in Montana cannot legally increase property taxation to support additional services without corresponding increases in population or taxable valuation. Local, State, and Federal governments would not benefit from increased tax revenues from the proposed Project nor experience the added expenditures from increased services.

The Agency concludes that in foregone benefits, impacts on public sector fiscal conditions associated with disapproval of the proposed Project would be major and negative in Musselshell County and minor and negative in Yellowstone County.

c. Impacts to law enforcement agencies associated with disapproval of the proposed Project.

Agencies responsible for law enforcement in Roundup, Broadview, Shepherd, Huntley, and Billings areas are understaffed, a condition that would not change with disapproval of the proposed Project.

Other development proposed in the Billings area (see Appendix B) should not affect the Musselshell and Yellowstone County Sheriff's departments; however, the Billings Police Department may experience short-term impacts due to the in-migration of construction workers.

The Agency concludes that impacts to law enforcement agencies with disapproval of the proposed Project would be minor.

d. Impacts to housing in the Roundup and Billings areas associated with disapproval of the proposed Project.

Fewer houses would be rented in the area with disapproval of the proposed Project. Without new development and a subsequent reduction in demand for housing, some homeowners would not be able to rent or sell their houses as readily or obtain higher rental prices due to economic effects of supply and demand.

Other development may increase the shortage of rental housing and temporary living quarters in Billings during construction phases. Construction activities may last through the summer, a time when motels experience higher occupancy rates due to tourist travel. It is possible that construction workers occupying motel rooms over the construction phase would displace tourists seeking motel accommodations.

The Agency concludes that impacts on housing in the Roundup and the Billings areas associated with disapproval of the proposed Project would be minor.

e. Impacts to educational facilities associated with disapproval of the proposed Project.

Roundup Elementary School, Broadview Elementary and High schools, Shepherd Elementary School, and Huntley Project Elementary School are overcrowded. Accreditation standards to be implemented in 1992 will require smaller class sizes in kindergarten through second grade. With or without the Project, these standards may require additional educational facilities if newly-enrolled elementary students are not evenly distributed throughout the elementary grades.

Without the Project, school districts would not have the opportunity to apply for grants for school facility expansion through the Local Impact Assistance Program of the Montana Coal Board. School District officials would need to find other avenues to pay for additional classroom space.

Other development may add to the overcrowded conditions of Shepherd and Huntley school districts. It is expected that few in-migrating construction workers would bring their families with them to live for the short duration of construction activities. In addition, the largest portion of construction activities usually occurs during the warmer months of the year, a time when school usually is not in session.

The Agency concludes that impacts on educational facilities with disapproval of the proposed Project would be minor.

f. Impacts to social well-being in the Bull Mountains area associated with disapproval of the proposed Project.

Individuals perceiving the Project to be a negative influence on the area would view its disapproval positively, whereas those favoring it would perceive disapproval as reducing the potential for increased local income and jobs. Individuals who supported the Project may perceive that their quality of life had been adversely affected by the Project's denial. Anticipation of a much-needed boost to the economy would not be realized and would cause disappointment to many. This loss of an optimistic economic outlook for the community could decrease the feeling of social well-being for some people.

It is likely that community conflict among groups favoring or opposing the Project gradually would subside with no development, but interpersonal polarization would remain for years. Other development should not affect the social well-being in the Bull Mountains area.

The Agency concludes that impacts to social-well being in the Bull Mountains associated with disapproval of the proposed Project would result in moderately negative impacts for those who favor the Project, and moderately positive impacts for those opposing it.

g. Impacts to social well-being in the Huntley area associated with disapproval of the proposed Project.

Individuals perceiving the proposed loadout facility to be a negative influence on the area would view disapproval of the proposed Project positively, whereas those favoring the proposed loadout facility would perceive disapproval as negative. It is likely that community conflict among groups favoring or opposing the proposed loadout facility gradually would decrease, but interpersonal polarization would remain for years. Other development should not affect the social well-being in the Huntley area.

The Agency concludes that impacts to social-well being in the Huntley area associated with disapproval of the proposed Project would result in moderately negative impacts for those favoring the Project, and moderately positive impacts for those opposing it.

12. Recreation

a. Impacts to outdoor recreational opportunities in the Bull Mountains area associated with disapproval of the proposed Project.

Impacts to outdoor recreation activities currently exist from equipment noise, traffic, dust, and access restrictions in the vicinity of the PM Mine.

Extensive private landownership limits access to much of the Bull Mountains area for outdoor recreation purposes. Montana Department of Fish, Wildlife and Parks' big game hunting regulations warn hunters that access to private land may be difficult to obtain.

The Agency concludes that impacts to outdoor recreation opportunities in the Bull Mountains area associated with disapproval of the proposed Project would be negligible.

b. Impacts to outdoor recreational opportunities in the Huntley area associated with disapproval of the proposed Project.

The noise, dust, and traffic associated with the sugar beet loading site has impacted outdoor recreation activities for residents along the haul route since its inception. Safety for individuals engaging in dispersed recreation activities such as walking, jogging, and bicycling on Heath Street is jeopardized by the heavy truck traffic. Additionally, there is dust and noise associated with the loadout activities and the use of trains for hauling the beets to processing facilities.

The Agency concludes that impacts to outdoor recreation opportunities in the Huntley area associated with disapproval of the proposed Project would be negligible.

13. Land Use

a. Impacts to land use in the life-of-mine area associated with disapproval of the proposed Project.

Impacts to cropland and rangeland in the life-of-mine area would occur if more intensive farming, ranching, timber production, or land development took place. These activities are part of the existing conditions and a substantial increase in activity beyond the existing conditions would not be expected.

No impacts to buildings, corrals, fences, and roads beyond normal wear and tear would be expected.

There would be little impact to future development of the life-of-mine area beyond the existing constraints of topography, soils, utility availability, and access. Operations at the PM Mine would continue. PM Mine eventually would be reclaimed under conditions of its permit and returned to agricultural use. Subsidence would continue to occur, but on a smaller area than the proposed Project.

The Agency concludes that the impacts to land use in the life-of-mine area associated with disapproval of the proposed Project would be negligible.

b. Impacts to land use along the rail spur associated with disapproval of the proposed Project.

Impacts to cropland and rangeland in the rail spur right-of-way would only occur if more intensive farming, ranching, timber production, or land development took place. A substantial increase in activity beyond the existing conditions would not be expected. No impacts to corrals, fencing, and roads beyond normal wear and tear would be expected.

There would be little impact to future development of land along the rail spur right-of-way beyond existing conditions.

The Agency concludes that the impacts to land use along the rail spur associated with disapproval of the proposed Project would be negligible.

14. Visual Resources/Aesthetics

a. Impacts to visual resources/aesthetics in the life-of-mine area associated with disapproval of the proposed Project.

Impacts to visual resources/aesthetics could occur as a result of natural processes, such as fire, and human activities, such as increased ranching, farming, timber production, or land development. Substantial increases in human activities in the life-of-mine area would not be expected. PM Mine facilities would continue to impact the visual resources/aesthetics until it was reclaimed.

The Agency concludes that impacts to visual resources/ aesthetics in the proposed life-of-mine area associated with disapproval of the proposed Project would be negligible.

b. Impacts to visual resources/aesthetics in the rail spur right-of-way associated with disapproval of the proposed Project.

Impacts on visual resources/aesthetics could occur as a result of natural processes, such as fire; and human activities, such as increased ranching, farming, timber production; or land development. Substantial increases in human activities in the rail spur right-of-way would not be expected. Trains would continue to operate on the Burlington Northern mainline through Broadview.

The Agency concludes that impacts to visual resources/aesthetics in the proposed rail spur right-of-way associated with the disapproval of the proposed Project would be negligible.

c. Impacts to visual resources/aesthetics in Huntley associated with disapproval of the proposed Project.

The proposed loadout site, located in a rail-served industrial area, could be developed for some other industrial use. If and how the area would be developed would determine the degree of impact to visual resources/aesthetics. The existing sugar beet loading site and rail line would remain in operation and would continue to impact the visual resources/aesthetics of the area.

The Agency concludes that the impact to visual resources/aesthetics in Huntley associated with disapproval of proposed Project could range from negligible to moderate.

15. Cultural Resources

a. Impacts to prehistoric and historic resources in the Bull Mountains area associated with disapproval of the proposed Project.

Prehistoric and historic resources are currently affected by natural processes such as erosion and fires; greater effects occur where human activities accelerate the natural processes. Deforestation and intensive cultivation of agricultural land are examples of activities contributing to resource disturbance. Minor vandalism and some unauthorized artifact collecting would also continue to affect the resource base. However, such processes are a part of the present conditions and no demonstrable effects beyond the present conditions would be expected.

The Agency concludes that impacts to prehistoric and historic resources in the Bull Mountains associated with disapproval of the proposed Project would be negligible.

b. Impacts to Native American (traditional) resources in the Bull Mountains area associated with the disapproval of the proposed Project.

Native American resources are currently affected by natural processes such as erosion and fires; greater effects occur where human activities accelerate the natural processes. Intensive cultivation of agricultural land would contribute to resource disturbance. Minor vandalism at rock art sites would also continue to affect the resource base. However, such processes are a part of the present conditions and no demonstrable effects beyond the present conditions would be expected.

The Agency concludes that impacts to Native American (traditional) resources in the Bull Mountains associated with disapproval of the proposed Project would be negligible.

C. COMPARISON OF ALTERNATIVES

Table IV-5 compares the Agency's conclusions regarding the intensity and duration of the Project's site-specific and cumulative impacts with those of the disapproval alternative.

TABLE IV-5
Impacts Comparison by Alternative For Bull Mountains Mine No. 1

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
AIR QUALITY		
Impacts to air quality in/around the surface facility complex.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to air quality along/around rail spur.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to air quality from coal trucks on U.S. Highway 87, Highway 312, and Heath Street.	Minor to moderate over short term and negligible over long term.	Negligible impacts.
Impacts to air quality in/around Huntley area from the Huntley loadout.	Minor to moderate over short term and negligible over long term.	Negligible impacts.
GEOLOGY		
Impacts to stability of slopes and sandstone cliffs in/around life-of-mine area.	Minor over short term and negligible over long term.	Negligible impacts.
TOPOGRAPHY		
Impacts to the topography of surface facility complex.	Moderate to major over short term and minor to negligible over long term. Irretrievable loss of topographical diversity due to WDA.	Negligible impacts.
Impacts to topography in/around life-of-mine area.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to topography along the rail spur.	Moderate over short and long terms.	Negligible impacts.
SOILS		
Impacts to soil productivity in areas of mining-related surface disturbance.	Moderate to major over short term and minor over long term. Productivity losses under track ballast would be irretrievable.	Negligible impacts.

TABLE IV-5 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
HYDROLOGY		
Impacts to ground and surface water supplies in/around life-of-mine area from mining-related subsidence.	Minor to moderate over short and long terms.	Negligible impacts.
Impacts to water quality in/ around the life-of-mine area from subsidence.	Negligible to minor over short and long terms.	Negligible impacts.
Impact to ground water quality and quantity in/around life-of-mine area from well operation.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to ground and surface water quality in sections 12 and 13 from mine waste disposal.	Negligible to minor over short and long terms.	Negligible impacts.
Impacts to ground water quality in the Huntley area from loadout operation.	Negligible over short and long terms.	Negligible impacts.
Impacts to alluvial ground water supplies in the Huntley area from water supply well at the loadout.	Negligible over short and long terms.	Negligible impacts.
VEGETATION		
Impacts to wetlands in/around life-of mine area.	Moderate over short term and minor over long term.	Minor impacts.
Impacts to wetlands along rail spur.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to vegetative productivity and stability along powerline and rail corridors.	Moderate to major over short term depending on revegetation success and weed invasion and negligible over long term. Irretrievable loss of productivity until reclamation was successful.	Negligible to minor impacts.
Impacts to vegetative productivity and stability within the surface facility complex and Huntley loadout.	Moderate over short term and negligible over long term. Irretrievable loss of productivity until reclamation succeeded.	Negligible impacts.

TABLE IV-5 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
WILDLIFE		
Impacts to tree- and cavity-nesting birds in/around life-of-mine area from subsidence.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to sharp-tailed grouse nesting and brood-rearing habitat, turkey habitat, and mule deer winter range from the WDA.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to elk, deer, and antelope in Bull Mountains area from increased human activity and mining-related activity.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to wildlife productivity within life-of-mine area from mining-related subsidence.	Minor over short term and negligible over long term. For aquatic animals, minor to moderate over short term and minor over long term.	Negligible impacts.
TRANSPORTATION		
Impacts to traffic flow and public safety along public highways from mining-related traffic.	Moderate and potentially significant in first 2 to 3 years. Negligible over long term.	Minor impacts.
Impacts to traffic flow and public safety from coal train traffic crossing roads.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to the integrity/stability of County and State roads from coal trucks.	Major and significant over short term and minor to moderate over long term.	Minor impacts.
Impacts to integrity/stability of County roads in the life-of mine area from mining-related subsidence.	Minor over the short term and negligible over long term.	Negligible impacts.

TABLE IV-5 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
NOISE		
Impacts to Bull Mountains area from noise.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts along the rails spur from construction and train noise.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts from coal truck noise along the coal-hauling route.	Minor to moderate over short term and negligible over long term.	Negligible to minor impacts.
Impacts to the Huntley area residents from noise due to construction and operation of Huntley loadout.	Minor to moderate over short term and negligible over long term.	Negligible to minor impacts.

TABLE IV-5 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
SOCIOECONOMICS		
Impacts to employment, personal income, and population.	Moderate and beneficial to Musselshell County and minor and beneficial to Yellowstone County over short term. Over long term, moderate and negative to Musselshell County and minor and negative to Yellowstone County.	In foregone benefits, moderate and negative in Musselshell County and minor and negative in Yellowstone County.
Impacts to public sector fiscal conditions.	Major and beneficial to Musselshell County and minor and beneficial to Yellowstone County over short term. Over long term, major and negative to Musselshell County and minor and negative to Yellowstone County.	In foregone benefits, major and negative in Musselshell County and minor and negative in Yellowstone County.
Impacts to law enforcement agencies.	Moderate during coal hauling to Huntley and then minor over short term. Negligible long term.	Minor impacts.
Impacts to housing in Roundup and Billings.	Minor over short term and negligible over long term.	Minor impacts.
Impacts to educational facilities.	Moderate and potentially significant over short term and negligible over long term.	Minor impacts.
Impacts to social well-being in Bull Mountains area.	Moderate and potentially significant over short term and minor long term.	Moderately negative impacts for those favoring the Project and moderately positive impacts for those opposing it.
Impacts to social well-being in Huntley area.	Moderate and potentially significant over short term and moderately positive over long term.	Moderately negative impacts for those favoring the Project and moderately positive impacts for those opposing it.

TABLE IV-5 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
RECREATION		
Impacts to outdoor recreational opportunities in the Bull Mountains.	Minor over short term and negligible over long term.	Negligible impacts.
Impacts to outdoor recreational opportunities in the Huntley area from Huntley loadout.	Minor over short term and negligible over long term.	Negligible impacts.
LAND USE		
Impacts to land use in the life-of-mine area.	Moderate over short term and minor over long term. For springs, minor to moderate over short term and minor over long term.	Negligible impacts.
Impacts to land use along the rail spur from construction and train traffic.	Moderate over short and long terms. Loss of agricultural productivity and other development would be irretrievable.	Negligible impacts.
VISUAL RESOURCE/AESTHETICS		
Impacts to visuals/aesthetics in the Bull Mountains area.	Minor to moderate over short and long terms. WDA would constitute an irretrievable and irreversable commitment of visual/aesthetic resources.	Negligible impacts.
Impacts to visual/aesthetics in the Bull Mountains area from the rail spur.	Minor to moderate over short and long terms. Cuts-and-fills and structures would constitute an irretrievable and irreversable commitment of visual/aesthetic resources.	Negligible impacts.
Impacts to visual/aesthetics from Huntley loadout.	Major and significant over short term and negligible over long term.	Negligible to moderate.

TABLE IV-5 (Continued)

IMPACT TOPIC	ALTERNATIVE 1	ALTERNATIVE 2
CULTURAL RESOURCES		
Impacts to prehistoric and historic resources.	Impacts minor and permanent. Loss of NHRP-eligible sites would be irretrievable. Data recovery could be beneficial.	Negligible impacts.
Impacts to Native American resources.	Impacts minor, permanent, and potentially significant. Some potentially sensitive areas may be irretrievably disturbed.	Negligible impacts.

CHAPTER V

CONSULTATION AND COORDINATION, PUBLIC PARTICIPATION, AND REVIEW

A. CONSULTATION AND COORDINATION

In the course of processing Meridian's application for its proposed Bull Mountains Mine No. 1, the Agency consulted or coordinated with a variety of State, Federal, and local agencies.

- Montana Department of Fish, Wildlife and Parks was contacted to provide consultation on wildlife matters.

- Montana State Historic Preservation Officer was contacted regarding cultural and historic resources in the area.

- Montana Department of Transportation, Rural Planning Section, was contacted regarding impacts to roadways and transportation corridors.

- Montana Department of Health and Environmental Sciences was contacted regarding air and water quality issues.

- Montana Department of Labor and Industry, Billings Job Service Office, was consulted regarding labor statistics in the Project area.

- The Endangered Species Field Office (Helena, Montana), U.S. Fish and Wildlife Service (USFWS), was contacted regarding Federal threatened and endangered species that could inhabit or otherwise use the proposed Meridian mine permit, rail spur, and power line areas.

- Musselshell and Yellowstone County Sheriff's departments, Billings Police Department and Montana Department of Justice, Highway Patrol Division, were contacted regarding law enforcement and traffic impacts.

- School districts in Musselshell and Yellowstone counties were contacted regarding the impact of additional students to area schools and times of school bus routes on roadways proposed for use in hauling coal.

- Yellowstone County and the cities of Billings and Roundup were contacted regarding public works capacities and recreational facilities.

- Montana Department of State Lands, Hard Rock Bureau was consulted regarding the operation of the rock quarry.

- U.S. Department of the Interior, Bureau of Land Management (BLM) was contacted about land use permitting requirements within the WDA and coal-mining issues in the Bull Mountains area.
- U.S. Department of the Interior, Office of Surface Mining (OSM) was consulted about the Project in general, Federal jurisdictions, and NEPA requirements.
- Montana Department of Natural Resources and Conservation was consulted about compliance with the Montana Major Facility Siting Act and other powerline issues.
- Montana Department of Justice, Fire Prevention and Investigation Bureau, State Fire Marshal was contacted regarding fire safety issues in and around the surface facility complex.
- Interstate Commerce Commission (ICC), Section of Energy and Environment, was contacted about regulatory requirements for the rail spur.

B. PUBLIC PARTICIPATION

A formal period for submitting written comments on the scope of the EIS analysis occurred from May 9, 1990, through July 9, 1990. A notice of intent to prepare an EIS on the Bull Mountains Mine No. 1 proposal was published in the May 9, 1990, Federal Register (55 F.R. 19365) and the Agency mailed 3000 brochures to households in the Roundup, Huntley and Broadview area. The notice and brochures included a description of the proposed Project, and a request for public participation in determining the scope of the issues to be addressed in the EIS. Seventy-nine comment letters on the scope of the EIS analysis were received. The Agency held two public meetings to obtain public input on the scoping process. Twenty people attended the first public meeting in Billings, Montana on June 11, 1990. Seventy-seven attended the second meeting, in Roundup, Montana on June 12, 1990.

Huntley Community Club sponsored 3 public meetings in Huntley, Montana to discuss various aspects of the proposal. Eighty-two people attended the first meeting, January 31, 1991. Montana DSL made a presentation and held a discussion on the permitting and EIS processes and the Project including the use of the Huntley loadout. Fifty-three people attended the second meeting, May 29, 1991. This meeting featured a presentation by Montana Department of Transportation on issues related to coal truck traffic, subsequent highway degradation, and use of the Huntley loadout. Fifty-eight people, including the Yellowstone County Commissioners, attended the third public meeting July 31, 1991. Montana DSL made a presentation, and discussion focused on the use of tax revenue for road maintenance, the use of the Huntley loadout, air quality, and general aspects of the Project.

The House Natural Resources Committee of the Montana House of Representatives held hearings on the Project in Helena, Montana on April 22, 1991, and January 9, 1992.

Numerous impact topics regarding Meridian's proposal were identified during these scoping activities. Many of these topics were evaluated as part of the impact analyses of the EIS in Chapter IV. Those topics not formally addressed are discussed in the following sections of this chapter along with the Agency's rationale for not including them in Chapter IV.

After the date of publication of the draft EIS, on August 31, 1992, the Agency opened a 35-day comment period during which it received public comments on, and review of, the draft EIS. Written comments on the draft EIS were accepted at the Agency's address shown on the cover sheet.

Public meetings were held in Huntley, Montana on September 22, 1992, in Billings, Montana, on September 23, 1992, and in Roundup, Montana, on September 24, 1992, to receive comments on the draft EIS.

The final EIS will be available for public review at the Helena and Billings offices of Montana DSL. The addresses of these offices are listed on the cover sheet and in Chapter I.

This final EIS presents revisions to and clarifications within the text, and public comments on the raft EIS and responses to those comments.

Montana DSL can make a decision whether to approve or disapprove Meridian's proposed Project no sooner than 15 days following public release of this final EIS.

C. PUBLIC ISSUES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

For various reasons, the Agency evaluated but determined not to address a few topics concerning the applicant's proposal that were identified by the public during scoping activities. A list of these topics, along with the Agency's rationale for not analyzing them, follows:

- Endangered or threatened wildlife or plant species protected by the Endangered Species Act of 1973.--

  On June 21, 1990, consultation was initiated with USFWS, regarding Meridian's permit application, by requesting a list of protected species from USFWS that could occur in the vicinity of the proposed Project. On June 29, 1990, USFWS responded with a list indicating that the Bald Eagle (Haliaeetus leucocephalus,) Peregrine Falcon (Falco peregrinus,) and Black-footed Ferret (Mustela nigripes) constitute the protected species that could occur within and near the Project life-of-mine area, rail spur right-of-way, powerline easement, and Huntley loadout. An updated species list was requested on November 20, 1991, and USFWS confirmed the original list on December 13, 1991. On February 21, 1992, a biological assessment of these species was prepared. The assessment concluded that the proposed Project would not affect protected species named on USFWS's list. On March 3, 1992, USFWS concurred with the determination of no effect. Because no endangered or threatened wildlife or plant species would be affected by developing the proposed Project, the Agency did not identify and analyze probable impacts to such species.

- Permitting of coal-mining activity under the Montana Strip and Underground Mine Reclamation Act (MSUMRA) of 1973 as amended.--

  The public expressed concern about the adequacy of the proposal, including the overall reclamation plan, the enforcement of reclamation after mining ceased, the monitoring of surface and ground water, and the replacement of water resources. These concerns were eliminated from specific analysis in this EIS because existing provisions in State law address each of the issues, and because the permit application package submitted by Meridian is assumed to be in compliance with all applicable State and Federal laws (see Chapter IV, Assumptions for Alternative 1).

  MSUMRA was enacted on March 16, 1973 by the Montana State Legislature for the purpose of protecting the environment, conserving natural resources, demanding effective reclamation of all lands disturbed by the taking of natural resources, setting effective requirements and standards, providing for orderly development of coal resources, and providing proper State administration and enforcement in order to achieve these objectives. The Act requires that an operator desiring a permit shall file an application which shall contain a complete and detailed plan for the mining, reclamation, revegetation, and rehabilitation of the land and water to be affected by the operation. Such a plan must also provide a determination of the probable hydrologic consequences of coal mining and reclamation operations, both on and off the mine site, with respect to the hydrologic regime. Sufficient data on the mine site and surrounding areas must also be collected so that cumulative impacts on hydrology can be determined.

  The Act also specifies that each applicant for a coal mining permit must file a surety bond payable to the State of Montana conditioned upon the faithful performance of the requirements set forth in the Act and in an amount not less than the total estimated cost to the State of completing the work described in the reclamation plan. Each operator granted a permit is required to reclaim and revegetate the land affected by an operation. As a condition to all mining permits, the Act also gives the regulatory agency the right of entry to all mining areas for the purpose of inspecting records, operations and monitoring equipment, as well as the authority to take appropriate enforcement actions if a coal-mining operation is found to be in violation of the Act. The specific roles and responsibilities of various State and Federal agencies involved in Project approval are described in Appendix D.

- Future coal markets for coal from the Bull Mountains Mine No. 1.--

  The public expressed some concerns about the coal market and its relation to Bull Mountains coal. Specifically they were concerned about the applicability of Federal "monopoly restrictions" to Meridian's mining activities, the potential markets for Bull Mountains coal, and the impacts of the western coal glut on the economic feasibility of underground coal mining in the Bull Mountains over the next 40 years. After identifying these issues, the Agency decided to eliminate them from further consideration because they relate to larger national issues that pertain to coal supply, demand, production or a competitive market system beyond the scope of this EIS. See Chapter I for a description of the scope of the EIS analysis.

- The Bull Mountains coal for land exchange.--

  Issues associated with the approval or disapproval of the Bull Mountains land exchange were analyzed in the BLM's Bull Mountains Exchange Final EIS (Bureau of Land Management 1990b). This EIS addressed the proposed exchange of 3,674.36 acres of Federal coal estate for 9,873.18 acres of high-value recreation and wildlife lands. The analysis also covered concerns the public had expressed regarding impacts to State royalty revenue losses if the proposed land exchange were finalized. BLM selected the proposed exchange action as its preferred alternative.

  The Administrative Rules of Montana directs agencies to "tier" from program, policy, or plan EISs of broad scope to those of a narrower scope, to eliminate repetitive discussions, and to exclude issues already decided. Therefore, since the BLM's Bull Mountains Exchange Final EIS previously addressed issues associated with the land exchange and subsequent development of Federal coal resources in a large portion of the Bull Mountains area, the Agency has eliminated such issues from the current EIS analysis. See Chapter I for a more detailed description of the scope of the EIS analysis.

- Whitney Benefits Inc. and Peter Kiewit Sons' Company vs. U.S.--

  The public raised the question of whether the Whitney Benefits legal decision applied to mining activity in the Bull Mountains. The legal decision addressed the issue of whether the U.S. Claims Court correctly concluded that the enactment of Surface Mining Control and Reclamation Act's (SMCRA) prohibition of surface mining of alluvial valley floors (AVFs) constituted a taking of the Whitney Benefits coal property in Sheridan County, Wyoming. The case dates from 1973 when Peter Kiewit Sons' Co. offered to buy mining rights to Whitney Benefits coal under an AVF. In December 1974 the 2 companies signed a lease giving Peter Kiewit Sons' the right to mine the coal in exchange for royalties. Peter Kiewit Sons' filed a permit application with the Wyoming Department of Environmental Quality.

  The enactment of SMCRA on August 3, 1977 contained provisions specifying that surface mining could not "interrupt, discontinue, or preclude farming on AVFs that are irrigated or naturally subirrigated." Wyoming denied the permit application with the explanation that a large portion of the coal was under an AVF. After failing to agree on an acceptable exchange of lands with the U.S. Department of the Interior, the companies filed a complaint with the U.S. Claims Court, charging that SMCRA had deprived them of "all economically viable use" of their property. The Court ruled in favor of the companies and awarded them damages, finding that SMCRA "had a devastating economic impact on the companies' property." The decision was appealed unsuccessfully by the Federal Government.

After considering this issue, the Agency eliminated it from further analysis because the legal case of Whitney Benefits Inc. and Peter Kiewit Sons' Company vs. U. S. pertained to a government "taking" of coal property involving an alluvial valley floor, which related to a permitting application that happened to be pending at the time of the SMCRA enactment. The Whitney Benefits case is not believed applicable to mining activity in the Bull Mountains and, therefore, its impact is beyond the scope of the current EIS.

- Fiscal management of State and County governments in Montana.--

  The public voiced some concerns about the effect of the proposed Bull Mountains mining operation on State and County governments. These concerns related to whether the State would receive adequate reimbursement for the removal of coal from the region; whether staffing/pay levels at the Department of State Lands were adequate to ensure proper monitoring of the mining activity; and whether County operational problems, particularly in regard to road repair, would be exacerbated by the proposed mining activity. The Agency concluded that concerns of this type are related to the fiscal management of State and County governments rather than to the specific proposal to mine coal in the Bull Mountains. Nothing in the proposed action would affect how the respective levels of government staff their departments, maintain pay scales, or budget and disburse funds for particular projects. Therefore, since all of these issues are beyond the scope of analysis for this EIS, the Agency did not attempt to identify and analyze associated impacts. See Chapter I for a full description of the scope of the EIS analysis.

- Management of private lands controlled by Meridian.--

  The public raised some concerns about Meridian's past, present, and future land management and development policies, along with concerns about economic impacts to local ranchers if Meridian canceled lease agreements. Reclamation and land use requirements set forth in MSUMRA provide adequate regulation of land management and development of disturbed land within the mine permit area during mine life. MSUMRA requires that postmining land use for a permit area must be: grazing land for livestock and wildlife, fish and wildlife habitat, or both, unless alternate reclamation is approved by the regulatory authority. Meridian's future development and management of land that has not been disturbed within the permit area, and plans for privately controlled land outside of the proposed permit area, are unrelated to the proposed Bull Mountains Mine No. 1 and beyond the scope of the EIS analysis.

- Future development of the Bull Mountains Mine No. 1 life-of-mine area.--

  The public expressed concerns that future development of the Bull Mountains Mine No. 1 life-of-mine area could result in unanticipated environmental impacts. The concerns included questions about the disposal of fly/bottom ash and other hazardous waste material at the mine site, the impact if a mouth-of-the-mine power plant is constructed in the future, the impact if coal is mined elsewhere in the region from the same coal deposit, and the possible impacts from future petroleum exploration and extraction projects that might occur in the region. The majority of these concerns were found to be of a speculative nature, unconnected to any part of the proposed mining plan or to any event likely to occur in the foreseeable future.

The environmental impact of handling and disposing of mine wastes in an unanticipated manner was considered as an alternative in Chapter II, but then eliminated from further analysis since it was found to be economically impractical and generally incompatible with the longwall method of coal removal. The construction of a power plant at the mine mouth was also dropped from the current analysis of issues since it is only speculation at the present time, and any future action regarding a power plant would require formal State and Federal approval and additional permits. The Agency could find no evidence to suggest that other operators intend to mine coal from the same deposits in the foreseeable future, so this issue was eliminated from further consideration. The concern about future petroleum exploration and extraction in the region was determined to bear little relevance to the proposed mining action and was also eliminated from further consideration. In summary, the Agency determined that there was insufficient evidence to suggest that any of these events might occur in the reasonably foreseeable future in or near the life-of-mine area and that an analysis of the potential impacts was beyond the scope of this EIS. See Chapter IV and Appendix B for a list of cumulative assumptions used by the Agency to perform the impact analysis. New projects would have to comply with all State and Federal laws including MEPA. Cumulative impacts of these projects would be addressed during environmental review.

- Future development of a chrome refinery by the Chrome Corporation of America and other mineral activity in the area.--

  The Agency considered public concerns about impacts associated with the chrome refinery proposed to be built by the Chrome Corporation of America, east of Huntley, and also about impacts associated with an increase in other mining activity in Stillwater County. A preliminary analysis determined that the only measurable impact from either of these developments would be socioeconomic factors that could occur in the Billings area if related construction of facilities occurred at the same time as construction of the Project. If either or both of the other projects were concurrent with the construction of Bull Mountains Mine No. 1, there would be an increase in local population growth that could potentially impact social services, housing availability, school capacity, and other resources. However, construction of the chrome refinery is merely a proposal rather than a reality, and any concerns about the resulting impacts are based on speculation rather than fact. The Agency found no evidence to suggest that any increase in other mineral activity in Stillwater County is likely during the construction of proposed Bull Mountains Mine No. 1. Because these concerns are unrelated to the proposed mining plan or to events that are likely to occur in the reasonably foreseeable future, the Agency determined them to be beyond the scope of the EIS analysis.

D. REVIEW

This EIS has been mailed to all parties who have expressed an interest in receiving it. Additional copies of the document are available on request from Montana DSL addresses shown on the cover sheet. Copies of the EIS were mailed to the following State and Federal agencies:

Montana College of Mineral Science & Technology

Montana State University

Montana Bureau of Mines & Geology

Montana Department of Agriculture

Montana Department of Commerce, Montana Coal Board

Montana Department of Fish, Wildlife & Parks

Montana Governor's Office

Montana Environmental Quality Council

Montana Intergovernmental Review Clearinghouse

Montana Department of Health and Environmental Sciences

Montana State Historic Preservation Office

Montana Department of Natural Resources and Conservation

Montana Department of Revenue

Montana Department of Transportation

University of Montana

Montana State Library

U.S. Bonneville Power Administration

U.S. Bureau of Indian Affairs

U.S. Bureau of Land Management

U.S. Bureau of Mines

U.S. Forest Service

U.S. Office of Surface Mining

U.S. Soil Conservation Service

U.S. Bureau of Indian Affairs

U.S. Fish & Wildlife Service

U.S. Geological Survey

U.S. Interstate Commerce Commission

U.S. Environmental Protection Agency

National Park Service

CHAPTER VI

PREPARERS AND CONTRIBUTORS

A. FINAL EIS

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Bonnie K. Lovelace	Management Overview	M.S., Earth Science, Montana State University; B.S., Mathematics, Purdue University; B.S., Geology, Indiana University
Craig W. Pagel	Civil/Geotechnical Engineering	B.S., Geological Engineering, University of Idaho
Steven M. Regele	Technical Advisor/Vegetation	M.S., Botany, Montana State University; B.S., Biology, Eastern Montana College
Lynn R. Woomer	Technical Advisor/Soils	M.S., Forestry, Stephen F. Austin State University; B.S., Forestry, Southern Illinois University
David L. Clark	Vegetation	M.S., Biological Sciences, Montana State University; B.S., Fish and Wildlife Management, Montana State University;
Ken A. Kapsi	Hydrology	M.S., Forestry, University of Montana; B.S., Mechanical Engineering, University of Washington
MONTANA BUREAU of MINES AND GEOLOGY		
John R. Wheaton	Hydrology	M.S., Environmental Science/Hydrology, University of Montana; B.S., Geology, University of Montana

Name	Project Responsibility	Education
MORRISON-MAIERLE ENVIRONMENTAL, Corp.		
Eric B. Oswald	Project Management Geology/Soils/Topography Hydrology	Ph.D., Hydrology and Water Resources, Univeristy of Arizona; B.S., Agricultural Economics, University of Arizona
Michael A. Fillinger	Management Coordination	B.S., Biology, Whitman College
Robert E. Carroll	Vegetation/Wildlife	M.S., Applied Science, Montana State University; B.S., Applied Science, Montana State University
Robert L. Eng	Wildlife, Threatened & Endangered Species	Ph.D., Wildlife Management, University of Minnesota; M.S., Wildlife Management, Montana State University; B.S., Wildlife Management, South Dakota State University
Brian Sindelar	Vegetation/Wetlands	Ph.D., Range Ecology, University of Montana; M.S., Range Science, University of Idaho; B.S., Range Science, Montana State University
Michael A. Wagner	Transportation	B.S., Civil Engineering, Colorado State University; B.S., Geology, Fort Lewis College; P.E., MT No. 14028
John J. Hansen	Vegetation	M.S., Range Science, Montana State University; B.S., Animal Science, Montana State University
Steven A. Aaberg	Cultural Resources	B.A., Anthropology, University of California, Berkeley;
Anna M. Keefe	Word Processing, Layout	AutoCAD, WordStar, and WordPerfect Training
LISA BAY CONSULTING		
Lisa L. Bay	Editing	B.A., Environmental Planning, University of California, Santa Cruz
L.C. HANSON CO.		
Larry D. Redmond	Graphics	AutoCAD Intermediate Training
AM TECH SERVICES		
Annell E. Fillinger	Transcription of Public Hearings	Paralegal Degree, Paralegal Institute, Phoenix, Arizona

Name	Project Responsibility	Education
ECONOMIC CONSULTANTS NORTHWEST		
Richard E. Dodge	Economics	M.S., Statistics, Montana State University; B.A., Mathematics, University of Montana
NORTHWEST RESOURCE CONSULTANTS		
Linda D. Priest	Social Resources	B.S., Criminal Justice/Sociology, University of Nebraska

B. DRAFT EIS

Name	Project Responsibility	Education
MONTANA DSL		
Robert P. Bohman	Geology/Cultural Resources	M.S., Geology, Wayne State University; B.A., Natural Science/Geology, Monteith College, Wayne State University
Michael J. DaSilva	Project Management	M.S., Biology, Eastern Washington University; B.A., Biology, Eastern Washington University
Patrick J. Driscoll	Air Quality	B.S., Environmental Engineering, Montana College of Mineral Science and Technology
Clinton P. Erb	Project Management (Interim)	M.S., Urban and Regional Planning, University of Illinois at Urbana; B.S., Environmental Sciences, Principia College
Henry C. Follman	Geotechnical Engineering	B.S., Geological Engineering, Montana College of Mineral Science and Technology
Thomas F. Golnar	Hydrology	M.A., Zoology (Aquatic Ecology), University of Montana; B.S., Watershed Sciences, Colorado State University
Shannon B. Heath	Wildlife	MLA, Landscape Architecture & Environmental Planning, Utah State University; B.S., Wildlife Biology, Colorado State University
Bonnie K. Lovelace	Management Overview	M.S., Earth Science, Montana State University; B.S., Mathematics, Purdue University; B.S., Geology, Indiana University
Craig W. Pagel	Civil/Geotechnical Engineering	B.S., Geological Engineering, University of Idaho
Steven M. Regele	Technical Advisor/Vegetation	M.S., Botany, Montana State University; B.S., Biology, Eastern Montana College
Lynn R. Woomer	Technical Advisor/Soils	M.S., Forestry, Stephen F. Austin State University; B.S., Forestry, Southern Illinois University
MONTANA BUREAU of MINES AND GEOLOGY		
John R. Wheaton	Hydrology	M.S., Environmental Science/Hydrology, University of Montana; B.S., Geology, University of Montana

Name	Project Responsibility	Education
TETRA TECH, INC.		
Fred E. Budinger, Jr.	Cultural Resources	B.A., Anthropology, State College, San Bernardino
Susan B. Bupp	Cultural Resources/ Paleontology	M.A., Anthropology, University of Wyoming; B.A., Anthropology, Wichita University
Michael A. Fillinger	Project Management (Interim)	B.S., Biology, Whitman College
Earl F. Griffith	Technical Assistance	M.S., Earth Science (Geology), Montana State University; B.S., Earth Science (Geology), Montana State University
Allan F. Kuser	Recreation	B.S., Environmental Sciences, Sacramento State University; A.A., Wildlife Management, Shasta College
Michael K. Hussey	Land Use/Visual Resources/ Aesthetics	Registered Professional Landscape Architect, Arizona/Colorado/Nevada/New Mexico
William B. Moreland	Air Quality/Noise	M.A., Meteorology, University of California, Los Angeles; B.A., Meteorology, University of California, Los Angeles
Thomas E. Meyer	Transportation Engineering	B.S., Civil Engineering, University of Notre Dame
Ted R. Turk	Project Management	Ph.D., Ecology, University of California, Riverside; B.A., Biology, Williams College
Donald D. Weber	Transportation	B.A., Civil Engineering, University of Delaware, Newark
SERGENT HAUSKINS & BECKWITH		
Eric B. Oswald	Geology/Soils/Topography/ Hydrology	Ph.D., Hydrology and Water Resources, University of Arizona; B.S., Agricultural Economics, University of Arizona
ECONOMIC CONSULTANTS NORTHWEST		
Richard E. Dodge	Economics	M.S., Statistics, Montana State University; B.A., Mathematics, University of Montana
Linda D. Priest	Social Resources	B.S., Criminal Justice/Sociology, University of Nebraska

Name	Project Responsibility	Education
ECON, INC.		
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Robert L. Eng	Wildlife, Threatened & Endangered Species	Ph.D., Wildlife Management, University of Minnesota; M.S., Wildlife Management, Montana State University; B.S., Wildlife Management, South Dakota State University
Brian Sindelar	Vegetation/Wetlands	Ph.D., Range Ecology, University of Montana; M.S., Range Science, University of Idaho; B.S., Range Science, Montana State University
LISA BAY CONSULTING		
Lisa L. Bay	Editing	B.A., Environmental Planning, University of California, Santa Cruz
Nancy L. Horn	Word Processing	Undergraduate studies, Diablo Valley College
L.C. HANSON CO.		
Larry D. Redmond	Graphics	AutoCAD Intermediate Training

CHAPTER VII

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CHAPTER VIII

GLOSSARY

Above-grade crossing: Railroad route that runs via an overpass or bridge above a motor vehicle route.

Alluvial: Pertaining to material or processes associated with transportation or deposition by running water.

Angle of draw: In mining, the angle between limit line and a vertical reference line drawn from the edge of the mine area. The angle of draw is used to calculate the limit of subsidence beyond the boundaries of the mined area and is expressed in degrees from vertical above the edge of the mined area.

ANFO: Ammonia Nitrate Fuel Oil, used as a blasting compound in coal mining.

Annuals: Plants that complete their life cycle and die in 1 year or less.

Aquifer: A water-bearing layer of permeable rock, sand, or gravel.

At-grade crossing: An intersection of railroad and motor vehicle routes at ground level.

Backfilling and grading: The operation of refilling an excavation and finishing the surface.

Backstowing: The process whereby waste product from the mineral benefication plant (wash plant) is hauled or piped back into the underground voids created by mining. To place the coal waste rock back underground in the abandoned mine working.

Baghouse: An air pollution abatement device used to trap particulates by filtering gas streams through large fabric bags, usually made of glass fibers.

Bench face: The surface of an excavated area at some point between the material being mined and the original surface of the ground on which equipment can be set, moved, or operated.

Bentonite: A highly plastic clay that swells extensively when wet.

Berm: A strip of coal left in place temporarily for use in hauling or stripping, or a layer of large rock or other relatively heavy, stable material placed at the outside bottom of the spoil pile to help hold the pile in position. Also a mound of dirt to contain, control, or delineate.

Bond release: Return of a performance bond to the coal operator after the regulatory agency has inspected and evaluated the completed reclamation operations and determined that all regulatory requirements have been satisfied.

Borrow materials: Soil or rock dug from 1 location to provide fill at another location.

Borrow or fill areas: Places where earth material is removed or added for construction purposes.

Broadcast seeding: Scattering seed on the surface of the soil.

Bulkhead: A structure or partition to resist pressure. A wall.

Catchment: A reservoir or basin developed for flood control or water management for livestock and/or wildlife.

Clean coal: Coal that has been processed to remove impurities.

Coal jig: A device that separates coal from foreign matter by means of their difference in specific gravity in a water medium.

Coal loadout: Area/facility where coal is loaded onto some form of transport for delivery to market.

Coal preparation plant: A facility where coal is sized, cleaned and prepared for transport.

Coal refuse pile: Storage mound of coal waste material.

Coal reserve: The quantity of recoverable coal that is calculated to lie within given boundaries.

Coal rider seams: Thin, unmovable seam closely above a thicker, minable coal body normally only a few inches thick.

Coal waste: All the coal refuse from a mine.

Compressional recovery: As overburden rocks flex downward into the mined area they are acted on by tensile stress, which can cause elongation and cracking. As the mining face passes away from a point, the area of tensile stress moves away as well. As settling occurs, overburden rocks are acted on by compressional stress, which can cause shortening and closing of tensional phase cracks. Compressional recovery is the return of the rock column to its approximate state of premining stress and strain.

Continuous miner: A machine with a continuous excavating drum, used to extract coal from the face in room-and-pillar mining. It also loads that coal into cars or conveyors without the use of cutting machines, drills, or explosives.

Deformation zone: The uppermost zone of subsidence-related deformation that can develop above a mined area is called the "deformation zone". The overburden rocks in this zone sag downward without major fracturing, thus their lateral continuity is maintained. The rocks can pull apart or separate along bedding planes. The deformation zone generally extends from the top of the fractured zone to the ground surface.

Detonating cord: A cord manufactured by explosives companies that burns at a rate of thousands of feet per second, creating the effect of an explosion (violent shock and loud report).

Disturbed area: An area where vegetation, topsoil, or overburden is removed or upon which topsoil, spoil, and processed waste is placed as a result of mining.

Diurnal: Relating to or occurring in the daytime.

Dozer-tracked: Having operated a bulldozer on the surface of an area for the purpose of packing down the soil to firm the seedbed, to cover seed, and to impede wind erosion.

Drill seeding: A mechanical means of planting seed in relatively narrow rows.

Drop trailers: Trailers that are loaded with supplies and deposited at locations where the supplies will be used. The trailers serve as storage units on site until a time when supplies are used, and then are retrieved.

Edaphic: Having to do with the influence of soils on living things, particularly plants, including human use of land for plant growth.

Effluent limitations: Regulatory standards that apply to the discharge or outflow of water from ground or subsurface storage.

Energy dissipators: Device/structure used to reduce the velocity/energy of flowing water.

Ephemeral stream: A stream that flows only in direct response to rainfall and snowmelt events; having no baseflow.

Evaporation pond: An impoundment area where water is retained and allowed to evaporate.

Exploration holes: Boreholes drilled into the ground while searching for coal deposits.

Extensometers: An instrument for measuring minute deformations of test specimens caused by tension, compression, bending, or twisting.

Eyrie: The nest of a bird on a cliff or mountain top.

Fractured zone: The intermediate zone of subsidence-related deformation that can develop above a mined area is called the "fractured zone". Overburden rocks in this zone fracture and deform as they sag downward into the mined area, but still maintain their lateral continuity. Rocks can pull apart or separate along bedding planes. The fractured zone can extend upward above the mined area to a height that is 50 times greater than mining height.

Fragmented zone: The zone of subsidence-related deformation that can develop immediately above and within a mined area is called the "fragmented zone". Overburden rocks in this zone fragment, cave, and rotate as they collapse into the mined area. The fragmented zone can extend upward above the mined area to a height that is 10 times greater than mining height.

Full-seam recovery: Entire section of seam is dislodged by mechanical mining methods and the coal is separated from the rock outside of the mine by the cleaning plant.

Geotechnical responses: Processes which change the properties of soils, including compaction, freezing, groundwater lowering, and injection.

Grubbing: Removing vegetation and other material from a surface area prior to mining or mining-related disturbance.

Harrowed: Cultivated and smoothed soil done with an implement equipped with spikes, teeth, or disks.

Head of fill: Upper limit of a material fill.

Head-of-hollow filling: The placement of overburden material from mines in compacted layers in narrow, steep-sided hollows so that surface drainage is possible.

Heavy media bath: Dense chemical solution used to remove rock contaminants while cleaning coal.

Heterogeneities: Dissimilar ingredients or constituents.

Highwall: The unexcavated face of exposed overburden and mineral on the bank of the uphill side of a strip-mining excavation.

Horizonation: See definition of soil horizon.

Hydraulic conductivity: A measure of the ease with which water moves through soil or rock; permeability.

Incised: Having a margin that is deeply and sharply notched.

Joint: Fracture in rock, generally more or less vertical or transverse (lying across), along which no movement has occurred.

Lek: An assembly area where animals, especially grouse, carry on display and courtship behavior.

Life-of-mine: Length of time from permitting to final bond release during which coal can be extracted and mine-related activities can occur.

Limit line: The limit line is a straight line drawn from the edge of the mine area to the limit of measurable subsidence at ground surface.

Longwall mining: A method of mining whereby most of the coal is mined and the roof is allowed to cave in behind the miners as work progresses.

Longwall panel: The vertical face that is left intact as longwall mining work progresses toward the boundary of the mine.

Mass wasting: A general term for a variety of processes by which large masses of earth material are moved by gravity either slowly or quickly.

Mesic: Moderately moist.

Micro climate: The essentially uniform climate of a small site or place.

Micro relief: Small topography.

Mine waste disposal area: Designated place within the mine permit area, and approved by the regulatory authority, where coal processing waste and underground development waste is disposed of in a controlled manner.

Mitigation: Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.

Natural reinvasion of species: The migration and re-establishment of organisms into former habitat, without human assistance.

Net swell factor: "Net swell factor" or "bulking factor" is the volumetric increase of fragmented rocks relative to their undisturbed and in-place volume. The bulking factor is controlled by the size and shape of broken rocks, geometry of the cave zones, contact stresses among rock fragments, and relative strengths of affected rocks.

Nonerodible velocities: The speed at which water can travel without surface erosion.

Non-slaking rock: Earth material that does not crumble and disintegrate when exposed to air or moisture.

O and M: Operation and maintenance.

Opportunistic species: A species that can adapt to, and take advantage of, a variety of habitats or situations. This ability provides a benefit to the species in its distribution, numbers, and survival during changing conditions.

Overburden: Material of any nature that overlies a coal deposit, excluding topsoil.

Particulate emissions: Finely divided solid or liquid particles discharged into the air in the form of dust, smoke, fumes, mist, spray or fog.

Pascal: A pascal is a unit of pressure in the metric system and is defined as a newton/meter^2, where newton is a unit of force with units of kilogram x meter/second^2.

Passerine: The largest order of birds, including most songbirds.

Perched water table: Ground water contained above an impermeable bed and underlain by an unsaturated zone.

Perennial stream: A stream that flows throughout the year.

Perennials: Plants that live longer than two years.

Permanent seed mixes: Blends of seeds used to revegetate an area for final reclamation.

Portal: The entrance to a mine.

Postmining land use: The specific use or management related activity to which a disturbed area is restored after completion of mining and reclamation.

Postmining topography: The relief and contour of the land that remains after mining has been completed.

Potentiometric surface: An imaginary surface representing the total head of ground water and defined by the level to which water will rise in a well. A water table is a particular potentiometric surface.

Precipitation event: A quantity of water resulting from drizzle, rain, snow, sleet, or hail, in a limited period of time.

Propagule: A cutting, seed, or spore from which a plant grows.

Radial stacker: A machine used to stack coal in a radial arc.

Raise boring: The process of drilling (boring) a raise (vertical shaft) from the bottom up. First a vertical hole is drilled from the surface down into the mine workings. The cutter heads (boring machine) are brought into the underground mine workings. The rotary table (rotating mechanism) is placed over the hole at the surface, and the cutter heads are connected to the rotary table by a long pipe. As the cutting heads are rotated and pulled upward, earth is cut and falls back into the underground mine workings where it is hauled out to the surface or placed somewhere else in the mine.

Raptors: Birds of prey (e.g., hawks, owls, vultures, eagles).

Reclaim system: A system of tunnels and conveyor belts built beneath the coal storage pile for moving the coal out of the pile and onto transport units (trains or trucks).

Reclaim tunnel: A tunnel used to retrieve coal from storage above.

Recontouring: The movement of quantities of earth, usually by mechanical means, to reconfigure the relief and contour of the land.

Replacement wetlands: Lands created through human intervention to replicate the original wetland area, where the water table is usually at or near the surface.

Revegetation: Plant growth that replaces original ground cover following land disturbance.

Ripping: The act of mechanically breaking compacted soils or rock into pieces small enough to be economically transported by other equipment such as a scraper or dozer.

Riprap: A layer of broken rock, cobbles, boulders, or fragments of sufficient size and thickness to resist the erosive forces of flowing water.

Rock check dams: A dam of loose rock usually dumped in place, often with the upstream part constructed of hand-placed or derrick-placed rock and faced with rolled earth or with an impervious surface of concrete, timber, or steel.

Room-and-pillar mining: A method of mining that involves mining out rooms and leaving pillars of coal for overhead support.

Run-of-mine (ROM): Pieces of unprocessed coal removed from a mine.

Salvaging depth: The distance below land surface from which soil can be retrieved.

Sandstone lenses: Many of the sandstones associated with coal seams were deposited by fluvial (river) processes. This type of sandstone tends to be longer in one direction than in the other. The elongated axis is parallel to, while the shorter axis is perpendicular to, the direction of water flow in the ancient river. In cross section, fluvial sandstones appear to be lens-shaped and often are surrounded by finer-grained rocks such as siltstones and shales.

Scoria (clinker): Baked and fused rock resulting from in-place burning of coal deposits.

Sedimentation pond: A structure such as a barrier, dam, or excavated depression that slows down runoff for the purpose of allowing sediment to settle out.

Seep: An extensive line or surface seam where water emerges from the ground as contrasted with a spring where water emerges from a localized spot.

Seral stage: Developmental stage in the natural sequence of plant communities.

Small depressions: Shallow basins of limited size on the land surface that may retain moisture.

Soil Horizon: A distinct layer of soil, approximately parallel to the land surface, and differing from adjacent genetically related layers in physical, chemical, and biological properties or characteristics.

Spoil stockpile: A supply of waste material that is gradually accumulated as overburden is removed during mining.

Spring enhancement: A process that improves the quality/quantity of a source of water issuing from the ground.

Stilling basin: An open structure or excavation at the foot of an overfall, chute, drop, or spillway to reduce the energy of the descending stream.

Strain: Deformation resulting from an applied force. In mining, strain is one type of deformation caused by the downwarping of overburden rocks into the mined area. Horizontal strain is the ratio of the change in length of the ground surface to its original length that is caused by curvature. This can be extended (defined as positive) or shortening (described as negative). Surface strain caused by subsidence is one of the primary causes of damage to structures at the surface.

Strata: A single sedimentary bed or layer, of any thickness.

Stratabound: A mineral deposit confined to a single layer, bed, or stratum.

Subsidence: A surface depression over, and created by, underground mining.

Syncline: A trough of stratified rock in which the beds dip toward each other from either side.

Temporary seed mixes: Blends of seeds used to revegetate an area for a limited period of time prior to final reclamation.

Tensile strain: A normal stress that tends to pull apart materials on opposite sides of a real or imaginary plane.

Tilt: In mining, tilt (or change of slope) is one type of deformation caused by the downwarping of overburden rocks into the mined area. Tilt is the change of vertical displacement with respect to unit horizontal distance of the original ground surface. Tilt between two points of measurement along a subsidence profile can be calculated using data collected by subsidence monitoring and the following equation:

$$M_t = \frac{S_{t+1} - S_t}{X_{t+1} - X_1} = \frac{\Delta S_1}{1}$$

where X_{t+1} and X_1 are the two points, Δ is the first descending finite difference of tabulated vertical displacements at these two points and 1 is the distance between the two points, which is a constant that is small enough such that the curved surface over the interval can be approximated by a straight line. Tilt caused by subsidence is one of the primary causes of damage to structures at the surface.

Toe of the final slope: Bottom portion of an incline after mining-related disturbance has been completed.

Topsoil/subsoil stockpile: Soils that are removed prior to mining and gradually accumulated for reclamation and revegetation once mining is completed.

Tube stacker: A machine that stacks coal in a conical pile.

Underburden: Material of any nature, consolidated or unconsolidated, that underlies a coal deposit, excluding topsoil.

Underground reclaim: A tunnel that is used for removing waste material from a mine.

Ungulate: An animal having hooves.

Unit train: Generally, a train of 100 coal cars. Each car holds 100 tons for a total of 10,000 tons being moved in each unit train.

Unsuitable material: Material that fails Montana DSL standards for use in reclamation, or placement within an aquifer.

Vegetation sampling: The selection of a number of plants (a sample) from a larger number of plants (the universe).

Wildlife habitat: A geographical area that can provide for the key activities of wildlife.

Windrow: A row of hay raked up to dry before baling.

APPENDIX A

SUMMARY DESCRIPTION OF THE PROPOSED BULL MOUNTAINS MINE NO. 1 AND ASSOCIATED FACILITIES

A. INTRODUCTION

Meridian Minerals Company (Meridian) proposes to develop the Bull Mountains Mine No. 1, an underground coal mine located along the southern boundary of Musselshell County, about 35 miles northeast of Billings, Montana, and 16 miles southeast of Roundup, Montana (see Figure I-1). Support facilities for the proposed mine would be located throughout Musselshell and Yellowstone counties. The proposed Project has 5 elements: 1) the mine; 2) a temporary upgrade of the existing Montana Rail Link rail loadout near Huntley; 3) a proposed 33-mile rail spur from the Burlington Northern mainline south of Broadview; 4) a 17-mile upgrade and extension of the Fergus Electric Cooperative power transmission line from the City of Roundup; and 5) limited wetland enhancement activities outside the mine area (see Figure I-2). The Bull Mountains Mine No. 1 and its support facilities (the Project) , would occupy about 12,115 acres, and would eventually disturb about 8,250 of those acres. (Table I-1).

The proposed mining operation would convert the existing PM Coal Mine and portions of the adjacent coal test pit site into a full-scale underground mining facility. (Specific details of the existing PM Mine facility and coal test pit are included in Appendix B.) The total life of the proposed mine (life-of-mine) would be about 44 years: 2 to 3 years for premining development, rail spur construction, equipment installation, and limited coal production; 30 years to recover about 100 million tons of clean coal; 1 year to complete reclamation activities; and 10 years to obtain final bond release (Table I-2). The majority of the production, varying from 0.5 to 3.3 million tons of clean coal per year, would be shipped to both domestic and foreign consumers. In addition, the mine would continue to supply the small, local market currently served by the PM Mine.

(Table A-1 contains legal descriptions for Project components.)

1. Bull Mountains Mine No. 1

The life-of-mine area for the proposed mine would contain a total of 10,859 acres of private, State, and Federal lands (Table I-1), of which 7,041 surface acres could be disturbed by mining-related activities.

About 871 acres of the life-of-mine area would be occupied by a surface facility complex to service the mining operation. The facility would disturb 770 acres beyond the 101 acres previously disturbed by the PM Mine and coal test pit.

About 6,154 acres of the life-of-mine area could experience some surface subsidence caused by proposed underground mining activities. About 93 acres, potentially affected by subsidence, would also be disturbed by exploratory drilling (50 acres), hydrologic mitigation (43 acres) activities, and associated temporary road construction.

Outside the area subject to disturbance from subsidence, an additional 6 acres of the life-of-mine area would be disturbed by ventilation shaft installation and another 10 acres would be disturbed by hydrologic mitigation activities.

TABLE A-1

Legal Descriptions of the Proposed Bull Mountains Mine No. 1 and Associated Facilities

1. Bull Mountains Mine No. 1 *

Township 6 North, Range 26 East, Montana Principal Meridian: sections 12 through 14; and
Township 6 North, Range 27 East, Montana Principal Meridian: sections 3 through 5, 7 through 11, and 14 through 23.

2. Huntley loadout

Township 2 North, Range 27 East, Montana Principal Meridian: section 25.

3. Bull Mountains rail spur **

Township 4 North, Range 23 East, Montana Principal Meridian: sections 13, 14, 22, 23, 26, 27 and 34;
Township 4 North, Range 24 East, Montana Principal Meridian: sections 12 through 18;
Township 4 North, Range 25 East, Montana Principal Meridian: sections 5 through 7;
Township 5 North, Range 25 East, Montana Principal Meridian: sections 1 through 3, 9, 10, 16, 21, 28, 29, 31, and 32;
Township 5 North, Range 26 East, Montana Principal Meridian: Section 6; and
Township 6 North, Range 26 East, Montana Principal Meridian: sections 15, 20 through 22, 29, 31, and 32.

4. Fergus Electric power transmission line **

Township 6 North, Range 26 East, Montana Principal Meridian: sections 3, 4, 10, 11, 13, and 14;
Township 7 North, Range 25 East, Montana Principal Meridian: sections 1 and 12;
Township 7 North, Range 26 East, Montana Principal Meridian: sections 7, 8, 17, 20, 21, 28, 32, and 33; and
Township 8 North, Range 25 East, Montana Principal Meridian: sections 22, 23, 26, 27, 35, and 36.

5. Wetland enhancement activities **

Township 6 North, Range 27 East, Montana Principal Meridian: section 5, 7, 13, 23, 25, 27 and 29; and
Township 7 North, Range 27 East, Montana Principal Meridian: Section 35

* = Figures include rail and powerline acreages inside the life-of-mine area.
** = Figures reflect only those acreages outside of the life-of-mine area.

Mining operations could eventually employ 300 workers (Table I-3). Construction activities would employ about 38 workers over a 2- to 3-year period.

2. Huntley Truck Haul and Loadout

Proposed construction at Huntley would expand the capability of the existing low-volume coal loadout. Coal would be temporarily stockpiled and loaded; up to 1.1 million tons of clean coal per year during the 2- to 3-year period of permanent facility and rail spur construction at the proposed mine. The existing loadout occupies about 6 acres of private land (Table I-1) adjacent to the Montana Rail Link mainline. (Specific details of the existing Huntley loadout facility are included in Appendix B.) The expanded activities at the facility would not disturb any more acreage. Coal would be hauled by truck about 41 miles over County and State roadways from the proposed mine to the upgraded loadout.

Loadout activities could eventually employ 12 workers, and truck-haul operations, 50 workers (Table I-3). Expansion (construction) activities would employ about 12 workers over a 2- to 3-month period.

3. Bull Mountains Rail Spur

The proposed 33-mile rail spur and associated right-of-way outside the life-of-mine area, would occupy about 1,160 acres of private and State land (Table I-1) between the Burlington Northern mainline and the proposed mine. Proposed road relocation activities would involve about 10 acres of new road construction within the rail right-of-way and abandonment of about 5 acres of existing roadbed outside the rail right-of-way.

Rail spur construction activities would employ about 26 workers over about a 2-year period (Table I-3).

4. Fergus Electric Power Transmission Line

The 10-mile easement for the existing Fergus Electric power transmission line, between the city of Roundup and the Roundup substation, occupies about 36 acres of private and State lands (Table I-1). Three acres of this land could be disturbed when the existing line was upgraded to 69 Kv. The 7-mile right-of-way for the installation of new 69 Kv powerline from the Roundup substation to the proposed coal mine occupies about 27 acres of private and State land outside the life-of-mine area (Table I-1). About 13 of these acres could be affected by upgrade/extension activities. Fergus Electric Cooperative and would employ about 12 workers over a 2- to 3-month period for this work (Table I-3).

5. Wetland Enhancement Outside the Mine Area

Wetland enhancement activities are proposed at certain water sources outside the life-of-mine area, away from the mine site and associated disruptive activities (see Wetland Mitigation and Enhancement). These would constitute a 9-acre enhancement "bank" of wetland resources to temporarily mitigate Project-related wetland losses during mining operations. Impacts to existing springs and seeps and associated wetlands that might result from mining-related subsidence, would be mitigated gradually as reclamation operations progressed. The enhancement "bank" may remain as postmining wetland acreage even though other wetlands had been re-established. Enhancement activities outside the life-of-mine area would disturb about 22 acres of private land (Table I-1). Construction activities for wetland enhancement would occur throughout the mine life, using existing mine employees. The employees used should receive certified wetland restoration/construction training.

B. SURFACE FACILITIES AT THE MINE

The majority of surface facilities for the proposed mine would be centrally located on 391 acres of private land in sections 13 and 14 of T. 6 N., R. 26 E. in the western portion of the life-of- mine area (see figures I-3 and A-1). A mine waste disposal area (WDA) and its associated roads, stockpiles, and sediment ponds would be developed on an additional 480 acres of both private (379 acres) and Federal (101 acres) lands in sections 12 and 13, north and east of the main facilities area. A proposed 9-acre rock quarry would be developed in Section 12 within the boundary of the WDA. Ventilation shafts would be developed on 6 acres of private land in sections 11, 19, and 23 of T. 6. N., R. 27 E., west of the main facilities area.

Mine development and coal production would occur in 2 phases, each with its own processing facility requirements. Existing coal processing facilities for the PM Mine and Huntley loadout would be upgraded over an initial, 2- to 3-month period to support initial mine development activities and limited (Phase 1) coal production. Installation of the permanent (Phase 2) support facilities would begin after completion of Phase 1 and would require about 2 years to complete.

1. Main Facilities Buildings

A limited amount of coal would be removed during early development (Phase 1) of the mine (about 0.5 to 1.1 million tons of clean coal per year). This coal would be processed at the existing PM Mine facilities and shipped from the Huntley loadout. Three to 4 custom mobile trailer units would be transported to the mine site to house temporary office administration, warehouse, and training facilities.

Phase 2 production would require the construction of a variety of pre-engineered steel and/or concrete block structures located on concrete foundations (see Figure A-1). A combined administration office, training facility, and bathhouse would occupy a single building in the central portion of the main facilities area. A combined shop and warehouse building would be designed to provide large and small equipment repair with inside storage of spare parts. A mine rescue and ambulance building would include a training center for emergency-response personnel and parking for an ambulance and emergency fire fighting equipment. An annex (storage) building would provide covered storage for large parts and bulk materials along with a fenced storage yard. Other equipment parking and storage would be provided throughout the area. A single, coal-fired boiler, centrally located in the office/training/bathhouse building, would supply space heating and hot water for that building as well as the shop/warehouse, mine rescue/ambulance, and preparation plant buildings. Heating and hot water in other areas of the mine complex would be supplied with individual electric or propane units.

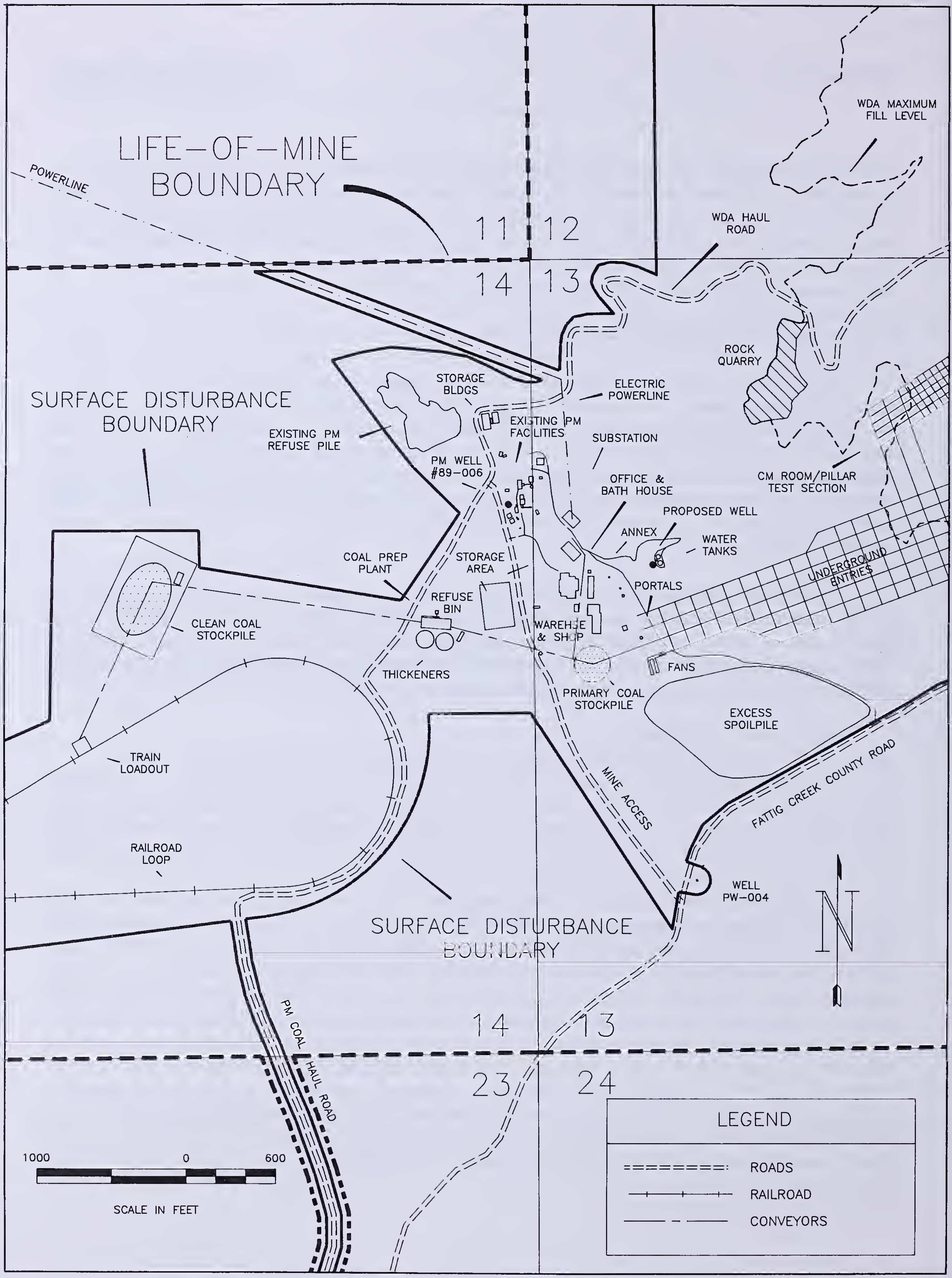
LIFE-OF-MINE BOUNDARY
POWERLINE
11
12
14
13
WDA MAXIMUM FILL LEVEL
WDA HAUL ROAD
ROCK QUARRY
SURFACE DISTURBANCE BOUNDARY
STORAGE BLDGS
ELECTRIC POWERLINE
EXISTING PM REFUSE PILE
EXISTING PM FACILITIES
SUBSTATION
PM WELL #89-006
OFFICE & BATH HOUSE
CM ROOM/PILLAR TEST SECTION
PROPOSED WELL
ANNEX
WATER TANKS
COAL PREP PLANT
STORAGE AREA
UNDERGROUND ENTRIES
REFUSE BIN
PORTALS
CLEAN COAL STOCKPILE
WAREHSE & SHOP
THICKENERS
FANS
PRIMARY COAL STOCKPILE
EXCESS SPOILPILE
TRAIN LOADOUT
MINE ACCESS
FATTIG CREEK COUNTY ROAD
RAILROAD LOOP
WELL PW-004
SURFACE DISTURBANCE BOUNDARY
N
PM COAL HAUL ROAD
14
13
23
24
1000
0
600
SCALE IN FEET
LEGEND
ROADS
RAILROAD
CONVEYORS

Figure A-1 Phase 2 production facilities

2. Coal Processing Facilities

Phase 1 coal handling would use all of the existing facilities from the PM Mine. Coal would be conveyed from the mine to a 30,000-ton run-of-mine (ROM) stockpile near the portal area. Initially, coal would be transferred from the ROM stockpile to a raw coal stockpile near the preparation plant with front-end loaders and haul trucks. Eventually, as production levels increased and Phase 2 schedules allowed, the underground reclaim system and covered conveyor would replace the front-end loader/truck haul operation. Coal would be washed at the preparation plant and stored in an adjacent stockpile. Coal would be weighed at the mine before shipment.

Phase 2 coal-handling activities would use new, high-volume facilities. As in Phase 1, coal would be conveyed from the mine to the 30,000-ton ROM stockpile near the portal area. An underground reclaim would transfer the coal to a covered conveyor for transport to a 1,200 ton-per-hour (TPH) preparation plant. Coal preparation would begin by crushing the ROM material to 4-inch size; waste material would be removed by heavy media separation. A covered conveyor would transfer the clean coal to a 100,000-ton capacity storage area. Two underground reclaim systems would transfer clean coal to a covered conveyor for transport to the unit-train loadout facility. Waste material would be stored in an 700-ton bin at the coal preparation plant before being transported by truck to the WDA.

Particulate emissions generated by the screening, crushing, and cleaning operations in the coal preparation plant would be controlled by fabric filters in the baghouse, during both phases 1 and 2. Water sprays would be installed on all coal crushing equipment and at all conveyor transfer points. All permanent conveyors outside the mine portal would be partially enclosed to limit particulate dispersion by wind. In order to control both dust and spillage in the coal stockpiles, the feed conveyors would discharge to tube stackers. Open coal stockpiles would be sprayed with water as necessary. Any coal stockpile fires would be extinguished promptly.

3. Ancillary Facilities

Ancillary facilities would include fuel and lube oil storage, explosives storage, wastewater treatment, power transmission, and solid waste storage. They would also include communications, water supply and distribution, and fresh air ventilation.

The fuel and lube oil storage system includes 4 refueling stations and 3 service centers located throughout the main facilities area. Refueling stations would consist of elevated diesel and/or gasoline fuel tanks installed within a concrete structure or berm made of impermeable material for spill containment. The containment structures would be capable of holding the entire tank volume, plus 25 percent.

Explosives used at the mine would include stick dynamite, boosters, ANFO, blasting delays, blasting caps and detonating cord. A secured explosives storage area would be located near the Administration Annex building. Equipment would include drop trailers for transport of the blasting agents and 2 skid-mounted explosive magazines, with dynamite and blasting caps safely separated.

Electric power used by mining equipment and coal-handling facilities would be delivered to an electrical substation located in the eastern portion of the main facilities area by Fergus Electric Cooperative. The substation would include dual transformers (1 for standby) and switchgear to convert incoming 69 Kv supply to lower voltages used throughout the facilities and mine area.

The communications network would include telephone service to the main facilities area furnished by U.S. West Communications. A private mine communications network would be installed throughout the mine operations area. Underground telephone service, currently located on the north shoulder of Fattig Creek Road, south of the main facilities area, would be extended along the access road to the mine. Where appropriate, both telephone and mine communication distribution lines would be installed parallel to the mine's electric distribution network.

The water supply and distribution system would be designed to furnish up to 400,000 gallons of water per day (gpd), at a maximum rate of 400 gallons of water per minute (gpm), for operational water requirements. It would also furnish up to 10,000 gpd, at a maximum 100 gpm, for potable water requirements at the mine. The operational supply system would consist of two 8,000-foot wells (1 operational and 1 standby) drilled into the Madison Formation in the eastern portion of the main facilities area, a deep well pump, two 100,000-gallon raw water storage tanks, a high-pressure pump station, and a watermain network. The potable supply system would use 4 existing, shallow (less than 200-feet deep) wells drilled into the Fort Union Formation by the PM Mining Company in the central and southern portion of the main facilities area, and a 10,000-gallon potable water treatment system and storage tank. Potable water for personnel would be transported throughout the mine in small containers.

The wastewater system would include facilities for the collection and treatment of sewage and washwater. Sewage effluent flow at the mine during full production is estimated to be less than 20,000 gallon per day (gal/d). Wastewater would be treated at a 20,000 gal/d package waste treatment plant located in the central portion of the main facilities area. Wastewater would be delivered to the treatment plant via pressurized pipes. Treated effluent would be discharged into the raw-water storage tanks for use at the mine facilities. Washdown waters from the facilities and suspension waters and coal dust washwaters would be collected in the evaporation ponds located throughout the main facilities area. Solids would be removed from the ponds and transported by truck to the WDA, as needed.

Ventilation facilities for the mine would involve 2 main fans (1 operational and 1 standby) capable of delivering up to 475,000 cubic feet of fresh air per minute throughout the mine. The air supply system would use the main mine entries in the portal area and 3 fresh air ventilation shafts to the surface, located throughout the life-of-mine area. Each shaft, equipped with water-tight linings, would require up to 2 acres of surface disturbance. Excavated materials would be removed through the mine by raise boring and stored in an excess waste pile. The entire disturbed area would be enclosed by a 7-foot, chainlink fence. These shafts would be equipped to serve as emergency escapeways for workers.

Solid waste would be stored temporarily throughout the main facilities area. Waste lumber, garbage, and other debris would be placed in covered storage containers for periodic disposal at a licensed commercial solid waste disposal facility. Waste grease, lubricants, paints, and flammable liquids would be stored in steel drums near the shop/warehouse for periodic disposal at a licensed and bonded liquid waste disposal facility.

The entire surface facility complex would be surrounded by barbed-wire fencing to limit public access. Existing fences would be used as much as possible. About one-half mile of new fence would be constructed along the north side of Fattig Creek Road in Section 13. Another 1 mile of new fence would be constructed in Section 12 around the WDA.

4. Storm Water and Sediment Control Facilities

a. Sedimentation ponds

Nine temporary sedimentation ponds would be constructed throughout the surface facility complex to contain runoff from mine development and production activities (see Figure A-2). The main facilities area would have 6 ponds; 2 near the ROM coal stockpile, 2 in the facilities area, 1 near the coal preparation plant, and 1 below the clean coal stockpile. The WDA would have 2 ponds, and the rock quarry 1 pond. Drainage areas above the temporary ponds in the main facilities area and the rock quarry would range from 3 to 39 acres. Drainage areas above the 2 WDA ponds would be 206 acres and 66 acres, respectively.

All sedimentation ponds would be designed to contain runoff from disturbed areas during a 10-year, 24-hour precipitation event.

They would be self-dewatering through the use of weep holes that would allow inflow to accumulate, suspended solids to settle, and water to discharge slowly, with an average containment time greater than 24 hours. Temporary impoundment spillways would be designed to safely pass the excess water flow from a 25-year, 24-hour runoff event, depending on the purpose of the impoundment. Accumulated sediment would be removed from ponds when sediment storage capacities were filled to 60 percent.

Ponds would be removed and reclaimed within 1 year after the areas they controlled achieved sufficient revegetation to make the ponds unnecessary.

b. Diversion ditches

Temporary diversion ditches (channels) would be used to route natural runoff around active mine support areas (including ventilation shaft facilities) and to collect and intercept runoff from disturbed areas for routing to either sedimentation ponds or into natural drainages, as appropriate. Side ditches would be used along the roads, conveyor corridors, and other linear structures (such as the rail spur). All channels would be grass-lined, trapezoidal or triangular, generally at slopes of one-half to 1 percent, and sized to safely pass the water flow from a 10-year, 24-hour precipitation event.

Temporary sand bags, straw bales, or rock check dams would be placed in ditches and other drainages to reduce flow velocities and minimize erosion. More durable riprap, energy dissipators, and

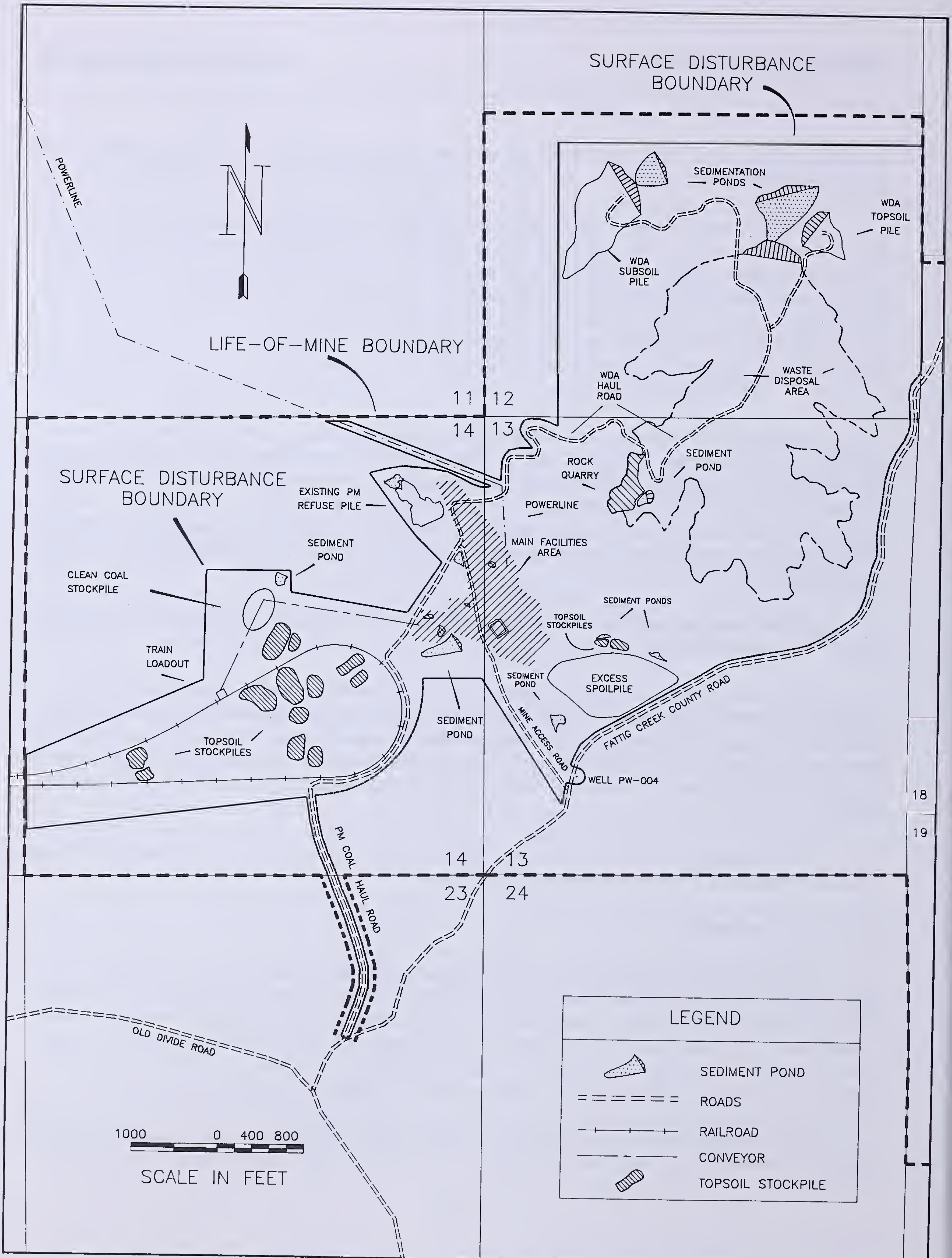
SURFACE DISTURBANCE BOUNDARY
POWERLINE
LIFE-OF-MINE BOUNDARY
11
12
14
13
SEDIMENTATION PONDS
WDA TOPSOIL PILE
WDA SUBSOIL PILE
WASTE DISPOSAL AREA
WDA HAUL ROAD
ROCK QUARRY
SEDIMENT POND
SURFACE DISTURBANCE BOUNDARY
EXISTING PM REFUSE PILE
POWERLINE
MAIN FACILITIES AREA
SEDIMENT POND
CLEAN COAL STOCKPILE
SEDIMENT PONDS
TOPSOIL STOCKPILES
TRAIN LOADOUT
SEDIMENT POND
EXCESS SPOILPILE
SEDIMENT POND
MINE ACCESS ROAD
FATTIG CREEK COUNTY ROAD
TOPSOIL STOCKPILES
WELL PW-004
18
19
PM COAL HAUL ROAD
14
13
23
24
OLD DIVIDE ROAD
1000
0
400
800
SCALE IN FEET
LEGEND
SEDIMENT POND
ROADS
RAILROAD
CONVEYOR
TOPSOIL STOCKPILE

Figure A-2 Surface facility complex

stilling basins would be used in steeper sections where additional erosion protection may be required. Corrugated metal pipe or concrete culverts would be used at all diversion channels and natural drainage crossings (e.g., access and mine roads and the rail spur). All culverts would be designed to safely pass water flow from a 10-year, 24-hour precipitation event.

5. Material Borrow and Disposal Facilities

a. Waste disposal area

A WDA for mine development and coal waste from the preparation plant would be developed on 480 acres north and east of the main facilities area (see Figure A-2). Eventually, the WDA would cover 169 acres, containing about 19,000,000 tons of waste material. About 19 percent of the ROM coal removed during the first 2 to 3 years of Phase 1 coal production is expected to be waste (258,000 tons per year), while 13 percent of the ROM coal removed during the 30 years of Phase 2 coal production is expected to be waste (493,000 tons per year). (NOTE: Increased efficiency of Phase 2 coal preparation facilities compared to Phase 1 facilities decreases the amount (percentage) of waste material per ton of ROM coal.) Mine development waste, not related to that from the coal preparation plant, is expected to represent less than 10 percent of the total waste that would be deposited in the WDA over mine life.

Constructing and filling the WDA would occur throughout the 33-year period of active mining. An underdrain system, of non-slaking, rock 16-feet deep and 16-feet wide, would be installed along the natural drainage from the head of the fill to the toe of the final slope. Rock side drains, 8-feet deep and 16-feet wide, would be installed throughout the WDA to direct flows to the main underdrain. Waste material would be spread over the area in maximum 2-foot lifts and compacted to at least 90 percent dry density (90% of maximum density at optimal moisture conditions). Coal processing waste, due to its high moisture content, would be allowed to air dry prior to compaction. Material eventually would reach a maximum height of about 140 feet at some locations within the WDA. After final elevations were reached, topsoil would be respread and the entire area revegetated.

b. Rock quarry

A rock quarry would be developed on about 9 acres within the WDA (see Figure A-2). The quarry would supply about 150,000 cubic yards of material for the underdrain at the WDA and for surfacing the roads throughout the active mine area. Rock would be mined by drilling and blasting. Dozers would move it to a small, portable, crushing facility for proper crushing and sizing. Material would be transferred to the WDA with front-end loaders and haul trucks.

C. OTHER FACILITIES

1. The Huntley Loadout

The proposed coal-loadout activities at Huntley would use the existing power, water, and road facilities from the Montana Rail Link operation. (Specific details of the existing Huntley loadout facility are included in Appendix B.)

Haul trucks would dump clean coal from the proposed mine into a 50-ton hoppered product bin (truck dump bin). The coal would be transferred from the bin to the main stockpile by a medium-capacity radial stacker using a 250-foot belt conveyor and flexible chute. The 30,000-ton stockpile (about 600 feet long, 200 feet wide, and 25 feet high) would parallel the railroad tracks (see Figure A-3). Coal would be transferred into rail cars through a 375-foot reclaim tunnel, using a medium-capacity, 25-foot by 100-foot belt conveyor and flexible chute.

A mobile trailer unit may be placed on the site to house temporary office facilities. Potable water would be provided from the existing Huntley water line on the property. An existing, 20-foot well drilled into the unconsolidated alluvial deposits would be used to furnish up to 30,000 gal/d of raw water for equipment washdown, service water for machines, and dust control. A water spray system would be installed to control dust on the access roads and coal stockpile. Electrical power would be provided from existing powerlines on the property. An existing pole-mounted transformer would be upgraded to accommodate increased power requirements. Chemical toilets, regularly serviced by an authorized sanitation company, would be provided for use by the staff. Equipment would be maintained and refueled off site. This site would be enclosed on 3 sides with an 8-foot wood or wood-like fence to limit vehicular and pedestrian access. Access along the south side of the operations area would be limited by the rail siding. Gates would be closed and the area patrolled during prolonged idle periods.

2. The Fergus Electric Power Transmission Line

The proposed upgrade and extension of the Fergus Electric power distribution network would use the existing facilities as much as possible. (Specific details of the existing Fergus Electric system are included in Appendix B.)

About 10 miles of the existing 50 Kv power distribution system between Roundup and the Roundup substation would be upgraded to 69 Kv service (see Figure I-2). The Roundup substation is located in Section 21 of T. 7 N., R. 26 E. along U.S. Highway 87, northwest of the main facilities area for the Project. The upgrade would include replacement of the 50 Kv wire and insulators. About 15 support poles would be replaced or modified within the 30-foot easement and a new transformer and new switchgear would be installed at the substation.

About 7 miles of new single-pole, overhead power transmission line would be built to extend 69 Kv service to the proposed mine from the Roundup substation (see Figure I-2). This extension would require the use of rubber-tired tractors and backhoes to install new, 40-foot support poles within the 30-foot easement and string the new powerline. The existing 7.2-Kv local distribution line would be maintained throughout the route, with new 69 Kv service placed at the top of the new poles and the existing service built beneath.

D. ROADS AND RAILROADS

Travel within the life-of-mine area and along the rail spur right-of-way would be restricted to established roads, except where necessary for maintenance, safety, and exploration work. Speed would be limited to 25 miles per hour (MPH) on all roads. All mine-facility roads and parking areas would

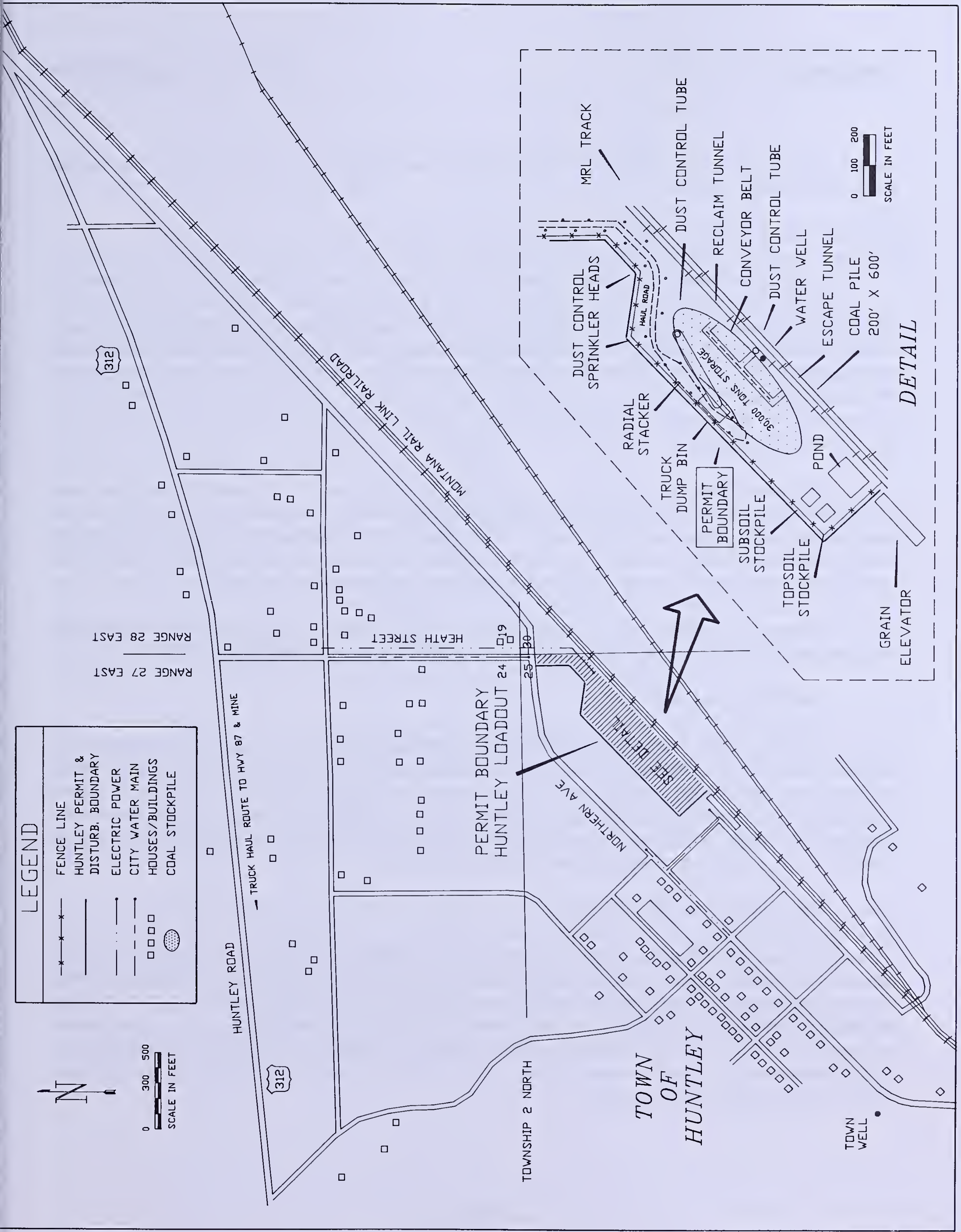
LEGEND
FENCE LINE
HUNTLEY PERMIT & DISTURB. BOUNDARY
ELECTRIC POWER
CITY WATER MAIN
HOUSES/BUILDINGS
COAL STOCKPILE
N
0 300 500
SCALE IN FEET
HUNTLEY ROAD
312
312
TRUCK HAUL ROUTE TO HWY 87 & MINE
RANGE 28 EAST
RANGE 27 EAST
HEATH STREET
19
30
25
24
PERMIT BOUNDARY HUNTLEY LOADOUT
NORTHERN AVE
SEE DETAIL
MONTANA RAIL LINK RAILROAD
TOWNSHIP 2 NORTH
TOWN OF HUNTLEY
TOWN WELL
MRL TRACK
DUST CONTROL TUBE
RECLAIM TUNNEL
CONVEYOR BELT
DUST CONTROL TUBE
WATER WELL
ESCAPE TUNNEL
COAL PILE 200' X 600'
0 100 200
SCALE IN FEET
DUST CONTROL SPRINKLER HEADS
HAUL ROAD
30,000 TONS STORAGE
RADIAL STACKER
TRUCK DUMP BIN
PERMIT BOUNDARY
SUBSOIL STOCKPILE
TOPSOIL STOCKPILE
POND
GRAIN ELEVATOR
DETAIL

Figure A-3 Upgraded Huntley loadout

receive regular applications of water or other approved dust suppressants. Yard areas and parking lots would be graveled or paved.

1. Primary Access Roads

The proposed mine complex would be accessible from the north and south by U.S. Highway 87, a 2-lane paved road that connects U.S. Highway 12 (near Roundup) to the Billings area. (Specific details of U.S. Highway 87 and proposed reconstruction activities are included in Appendix B.) Old Divide Road, a 2-lane paved County road that makes an approximate 7-mile loop to the east off of U.S. Highway 87, and Fattig Creek Road, a 2-lane, all-weather-gravel County road, provide primary access to the Project area (see Figure I-2).

2. Main Access Roads

The mine access road would connect the surface facility complex to Fatting Creek Road about 1.5 miles east of its junction with Old Divide Road (see Figure A-2). For security purposes, this road would be the only public access to the mine complex and would be controlled by a gate at its junction with Fatting Creek Road. The 36-foot-wide gravel road would be designed to carry daily volumes of up to 300 passenger vehicles and 100 commercial vehicles at speeds of up to 25 MPH.

Heavy service vehicles may occasionally use the existing PM Coal Road to reach the main facility complex (see Figure A-1). This road would be controlled by a gate at Fattig Creek Road.

3. The WDA Haul Road

A 2-mile gravel road would connect the main facilities area with the rock quarry and WDA (see Figure A-2). Off-road, 50-ton, end-dump trucks would be used to transport waste material to the WDA and rock from the quarry. The 36-foot-wide road would be designed with 15-foot-wide shoulders to carry daily volumes of up to 30 trucks at speeds of up to 25 MPH. Four-foot rock berms would be installed at the edge of fill/drop sections of the road. Shoulder width would increase to 25 feet when substantial cuts-and-fills were required for road construction.

4. Light-use Roads

Existing light-use gravel roads and 2-track trails would be used for mining-related activities, as necessary. Temporary roads would be constructed throughout the life-of-mine area for specific activities such as exploratory drilling, ventilation-shaft construction, pond and ditch maintenance, hydrologic mitigation, monitoring, reclamation, and inspection. These roads, when requiring formal construction or upgrade, could have a road surface up to 10 feet wide, with shoulders up to 10 feet wide on each side. After completion of a specific activity, these roads would be reclaimed by backfilling and regrading stored topsoil material, and reseeding.

5. The Bull Mountains Rail Spur

A proposed 33-mile rail spur would be used to connect the mine to the existing Burlington Northern rail system (see Figure I-2). (Specific details of the existing Burlington Northern system are included in Appendix B.)

Meridian proposes to purchase private lands for the right-of-way and secure use agreements for State parcels. Right-of-way for the rail spur would range from 150 to 500 feet wide, including a 10-foot fire guard on each side of the track. Public access would be controlled along the entire right-of-way, outside the life-of-mine area, with barbed-wire fences on both sides. The loadout loop at the mine and the mainline siding at Broadview are within secured areas and would not be directly fenced. Construction design calls for an equal balance of cut-and-fill, requiring about 6 million cubic yards of excavation. No other supplementary borrow or fill areas are proposed.

The proposed rail spur design includes 2 highway crossings: an "above-grade" crossing (see Figure A-4) of U.S. 87, near its junction with Majerus and Old Divide roads; and an "at-grade" crossing (see Figure A-5) of Montana Route 3, about 2 miles south of Broadview. In addition, existing County and private use roads in the area would be crossed 24 times: 4 County roads would be crossed "above-grade" (see Figure A-6) and the remaining 20 roads (6 County roads) would be crossed "at-grade". Sixteen "at-grade" light-use (2-track) vehicle crossings, including 7 "at-grade" fence/cattle guard crossings, would be constructed on private lands along the rail spur right-of-way. In addition, twenty-two 5-foot by 8-foot, livestock "underpasses" would be developed (see Figure A-7).

The proposed design includes 2 relocations of Majerus Road: about 2,250 feet in Section 2 T. 5 N., R. 26 E., and 500 feet in Section 29 T. 6 N., R. 26 E. 4,100 feet of Old Divide Road in sections 15, 16, and 22 T. 6 N., R. 26 E. would be relocated. About 11,250 feet of 2-track road would be relocated for private "at-grade" crossings. Two existing, underground, gas pipelines would be encased and about 750 feet of ephemeral drainage would be relocated. The majority of road and drainage relocations (about 10 acres) would be accommodated within the rail spur right-of-way (Table I-1). New road construction would cause the abandonment of about 5 acres of old County road.

A 6,800-foot siding would be constructed at the junction of the rail spur and mainline to accommodate a full-length unit train of 115 rail cars, 5 engines, and a caboose. The siding length would allow a coal train to clear the highway as quickly as possible regardless of train traffic conditions on the mainline track. The average train traveling to or from the coal mine should require less than 10 minutes to cross Montana Route 3. A 7,200-foot rail loop, also designed to accommodate a full-length unit train, would be constructed within the main facilities area at the coal mine (see Figure A-1). In addition, 6,900 feet of dual track would be constructed immediately outside the life-of-mine area for the rail loop/train loadout facility.

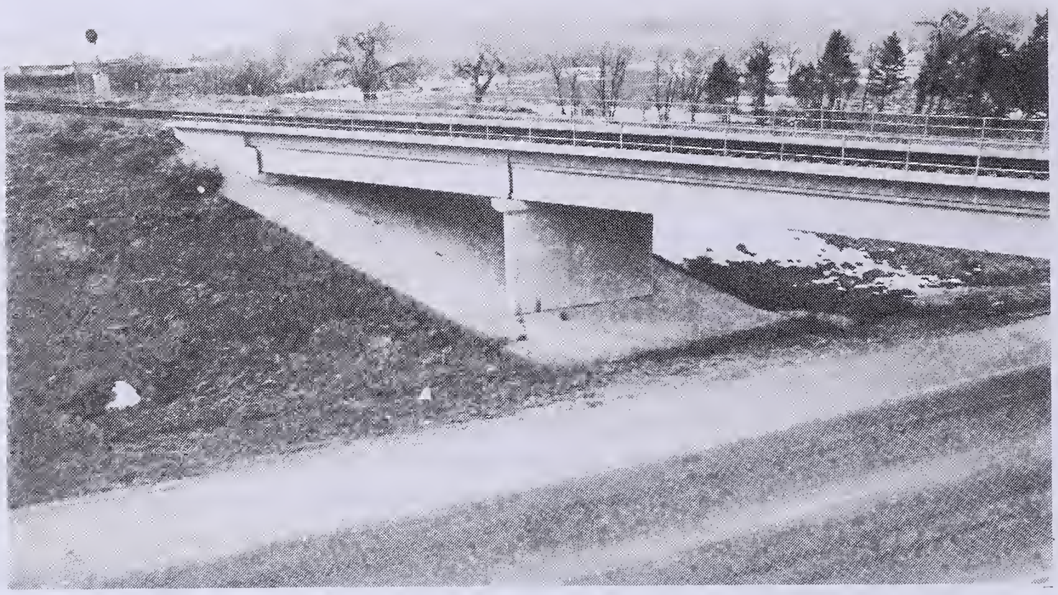

Figure A-4 Typical above-grade highway/ rail crossing

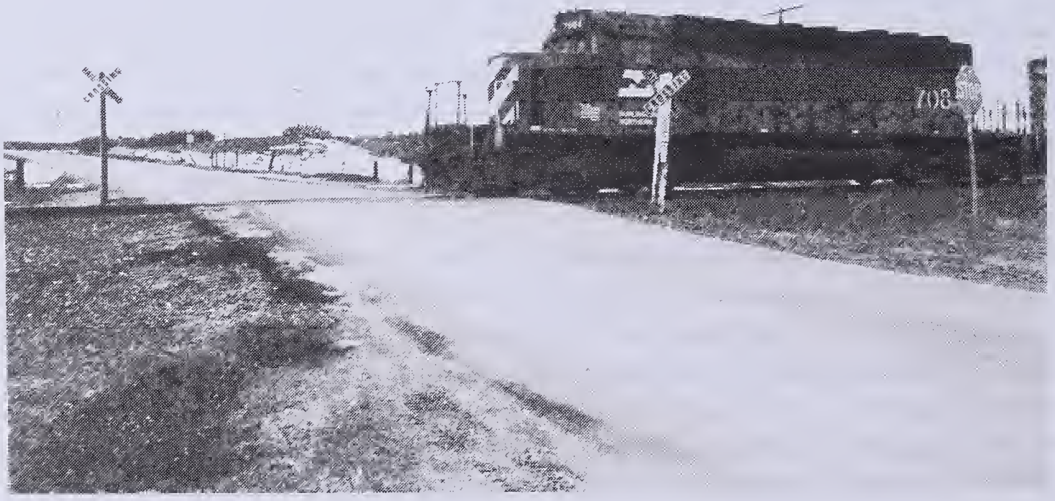

Figure A-5 Typical at-grade highway/ rail crossing

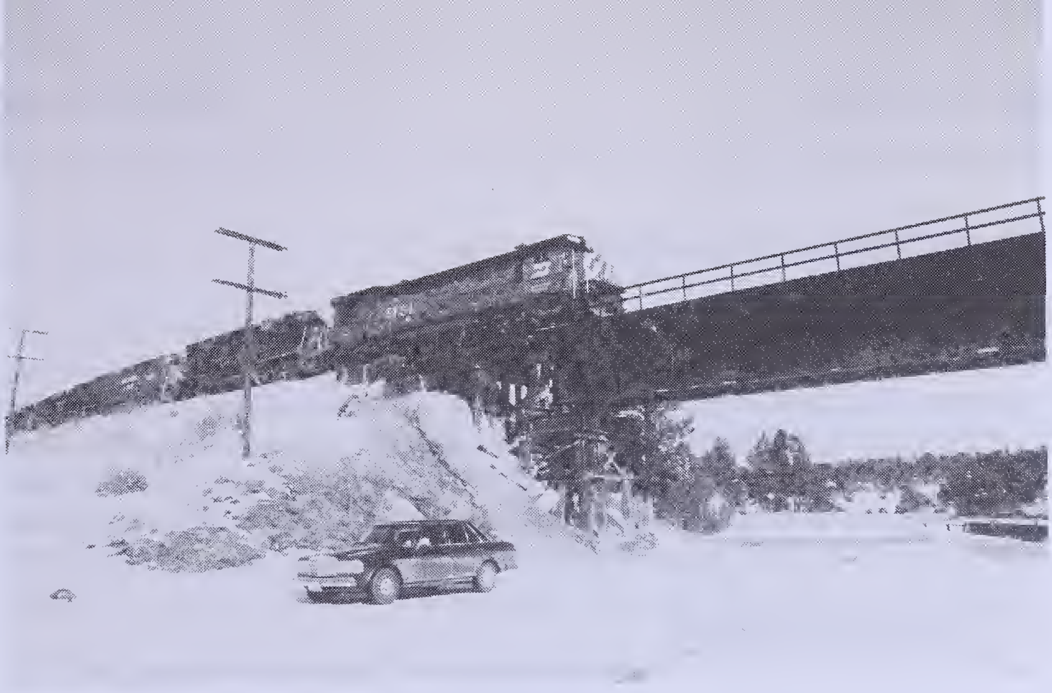

Figure A-6 Typical above-grade county road/ rail crossing

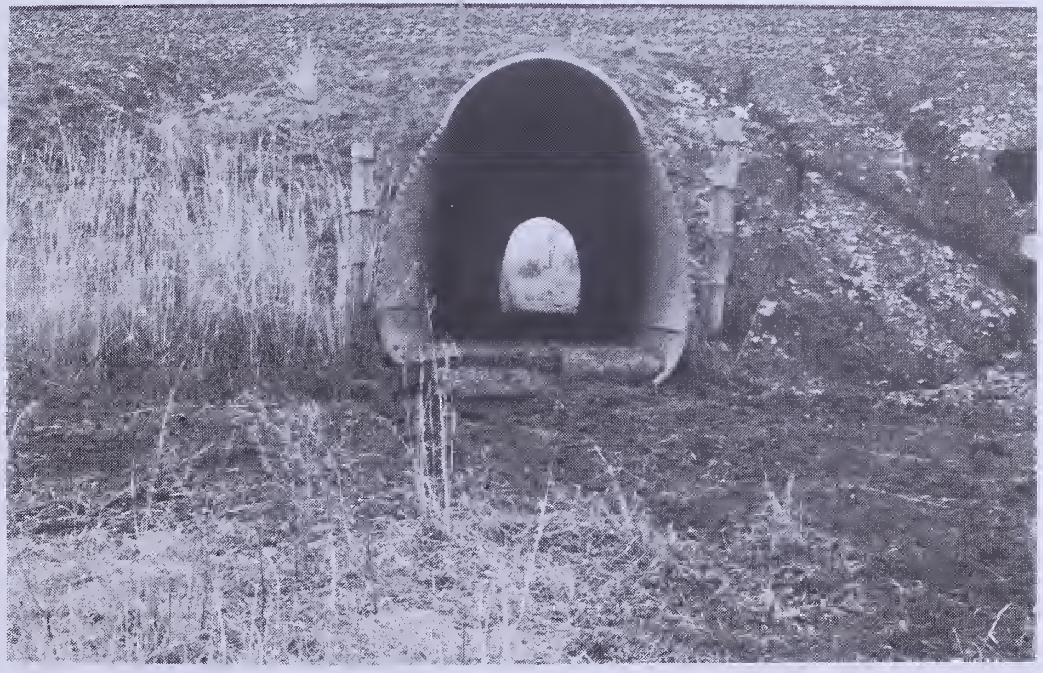

Figure A-7 Livestock underpass

E. FACILITY CONSTRUCTION AND MINING

1. Facility Construction

Development of temporary (Phase 1) production facilities would occur on 101 acres previously disturbed by operations at the PM Mine and the coal test pit. Development of permanent (Phase 2) support facilities, hydrologic mitigation activities, wetland enhancement activities, the rail spur, the powerline upgrade/extension, and other mining-related construction would generally involve new surface disturbance.

a. Clearing and grubbing

Before starting topsoil salvage in newly disturbed areas, surfaces would be cleared and very large shrubs or trees that would interfere with topsoil stripping would be removed to an approved disposal site.

b. Topsoil and excess spoil operations

Suitable topsoil and subsoils would be removed from disturbance areas prior to beginning construction activities. The soil salvage would be conducted in two separate activities that would segregate the topsoil and subsoil. Prior to actual topsoil removal operations, proper salvaging depth would be identified and staked under the supervision of a qualified person.

Soil material salvaged at the surface facility complex, about 1.4 million cubic yards, would be stored at one of the 12 nearby stockpiles. About 500,000 cubic yards of excess spoil material, excavated during initial portal development, would be stored in a designated stockpile located near the portal area (see Figure A-1). The spoil stockpile and the majority of topsoil/subsoil stockpiles associated with the surface facility complex would remain in place for the 33-year life of the support facilities. The topsoil/subsoil stockpiles are expected to occupy 45 of 871 acres of the surface facility complex. The spoil stockpile is expected to occupy 23 of the 871 acres.

Soil material salvaged from the rail spur right-of-way (about 1 million cubic yards), and other limited disturbance areas including the hydrologic mitigation and wetland enhancement sites, would be temporarily stored in numerous small stockpiles close to sites from which it was removed. Soils would not be salvaged along the powerline easement.

About 2,000 cubic yards of salvaged soils from construction of the sediment pond at the Huntley loadout were stockpiled in the southwest corner of the facility in 1989. This stockpile is anticipated to remain in place for the entire 2-year period of Phase 1 truck haul activities. The stockpile occupies 0.2 of the 6.1 acres for the loadout. (Specific details of the existing Huntley loadout facility are included in Appendix B.)

2. Coal Removal

Coal would be removed using both room-and-pillar and longwall methods. Room-and-pillar mining is generally defined as "a system of mining in which part of the coal is left in place as pillars for support", and longwall, "a system of mining whereby most of the coal is mined and the roof over the worked out area is allowed to cave" (Stout 1980). (A complete discussion of room-and-pillar and longwall mining methods is included in Appendix C.) Longwall methods would be used where possible within the mine. Room-and-pillar methods would be used to rework the portals, to develop the main entry and longwall panels, and to mine those irregularly-shaped areas too small to be practical for longwall mining. (See Figure A-8 for a map of longwall/room-and-pillar areas within the mine.)

a. Coal operations during limited production

Phase 1 mine development and limited coal production would begin after completion of the temporary (Phase 1) production facilities and continue through the 2-year period of permanent (Phase 2) support facility construction.

Existing portals into the coal seam at the PM Mine would be used as 4 primary entries for the proposed mine. New portal work would include the installation of additional protective tunnel liners and the addition/upgrade of bulkheads to protect and stabilize portal areas. Once the 4 primary entries had progressed 1,500 feet into the mine, they would be expanded into 7 mainline entries, using a single continuous miner. Three of these entries would provide travelways for workers, materials, and ventilation intake. Another 3 entries would be used only for ventilation return. An isolated belt entry located between the intakes and returns would be used to transport mined coal to the ROM stockpile outside the main portal.

Development of mainline entries would be followed by development of a room-and-pillar panel in the northern half of Section 13 (see Figure A-8) to serve as a test area for equipment performance. It would also provide verification of expected geotechnical responses to mining operations, provide experience in panel development techniques, and increase the operator's knowledge of how support pillars would behave.

When development of longwall panel entries began (about 6 months later), a second continuous miner would be added. The first longwall panel would begin in the southeast portion of Section 19 (see Figure A-8). Longwall mining equipment would be installed in preparation for full production mining about 12 months after work on the panel entries began.

During the first 2 years of limited production, ROM coal removal would increase from an initial rate of 0.62 million tons per year (0.50 million tons of clean coal), to a maximum rate of 1.36 million tons per year (1.10 million tons of clean coal). With a 24-hour workday and 340 workdays per year, maximum production during phase 1 would require about 167 tons of ROM coal to be mined each hour (4,000 tons per day).

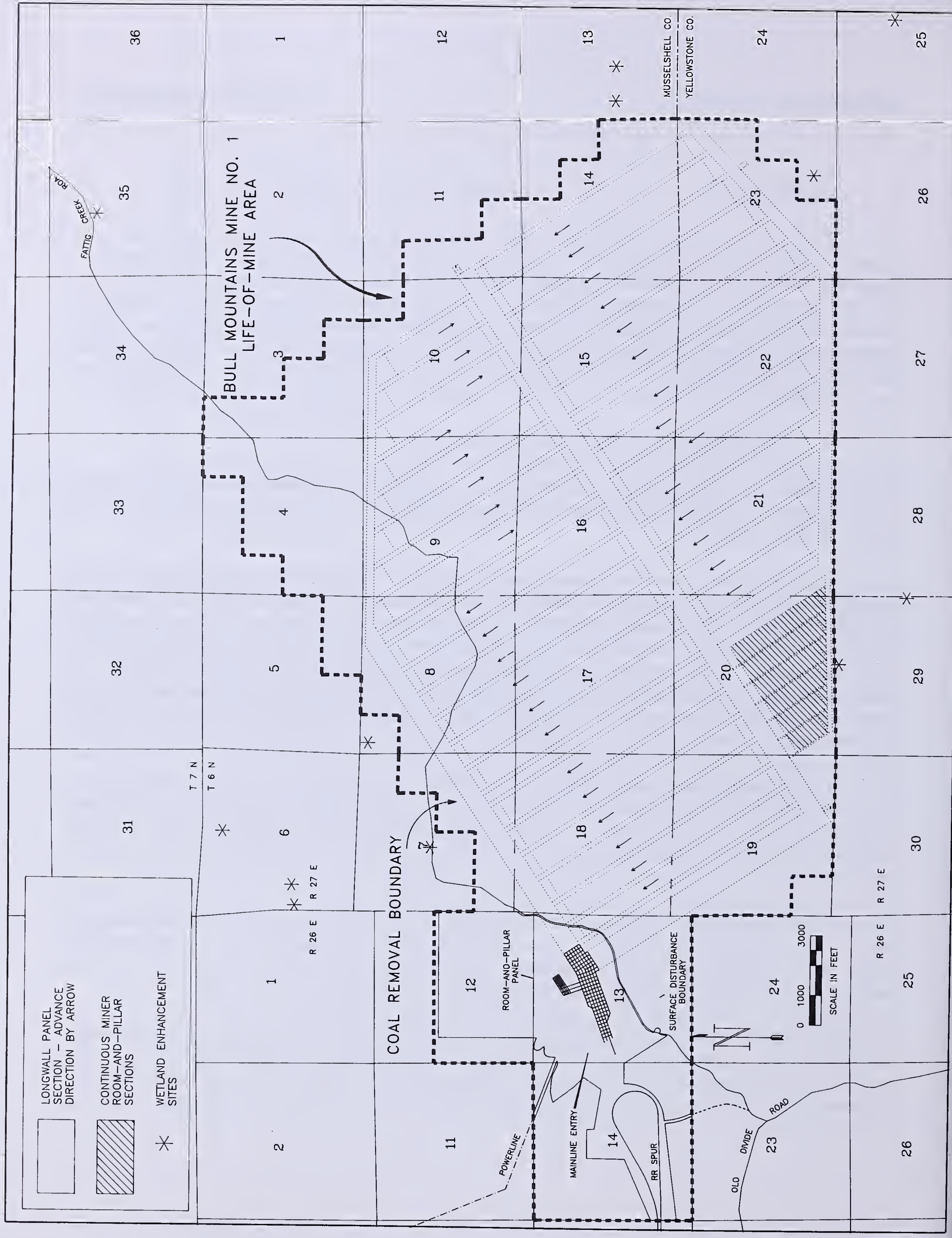
BULL MOUNTAINS MINE NO. 1
LIFE-OF-MINE AREA
COAL REMOVAL BOUNDARY
ROOM-AND-PILLAR PANEL
SURFACE DISTURBANCE BOUNDARY
MAINLINE ENTRY
RR SPUR
POWERLINE
OLD DIVIDE ROAD
FATTIG CREEK ROAD
MUSSELSHELL CO.
YELLOWSTONE CO.
T 7 N
T 6 N
R 26 E
R 27 E
LONGWALL PANEL SECTION - ADVANCE DIRECTION BY ARROW
CONTINUOUS MINER ROOM-AND-PILLAR SECTIONS
WETLAND ENHANCEMENT SITES
0 1000 3000
SCALE IN FEET
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Figure A-8 Life-of-mine area, underground workings, room-and-pillar, and longwall areas

b. Coal operations during full production

Full-scale coal production would begin after installation of longwall mining equipment and completion of permanent (Phase 2) support facilities, including the Fergus Electric powerline upgrade/extension and the 33-mile rail spur.

Mining activity would progress from one longwall panel to the next, in a northeasterly direction until reaching the edge of the life-of-mine area. Mining would then shift to the south and progress from one longwall panel to the next (see Figure A-8) in a southwesterly direction until the entire life-of-mine area was mined. It is anticipated that panels 2 to 20 would be mined in years 3 to 21 and panels 21 to 35 would be mined in years 21 to 33 (see Figure A-9).

Proposed longwall panel design requires 3 entries per panel to allow for intake air and access, conveyor belts (coal haulage), and air return. Two 60- to 80-foot pillars would be retained between the 3 entries with cross-cuts about every 120 feet for access. Panel size would range from 550 feet to 820 feet wide and from 4,000 to 8,000 feet long. Longwall equipment would remove the full coal seam up to either 12 or 14 feet.

Six additional room-and-pillar panels would be developed over mine life to maximize recovery of the coal reserve in those portions of the mine too small to accommodate longwall mining techniques (i.e., in the southwest portion of the life-of-mine area). The continuous miner would remove the full coal seam up to 12 feet.

The transfer of coal from mining sections (both room-and-pillar and longwall) to the ROM coal stockpile outside the main portal would be accomplished by using multiple conveyor belt installations that would form a network extending throughout the mine.

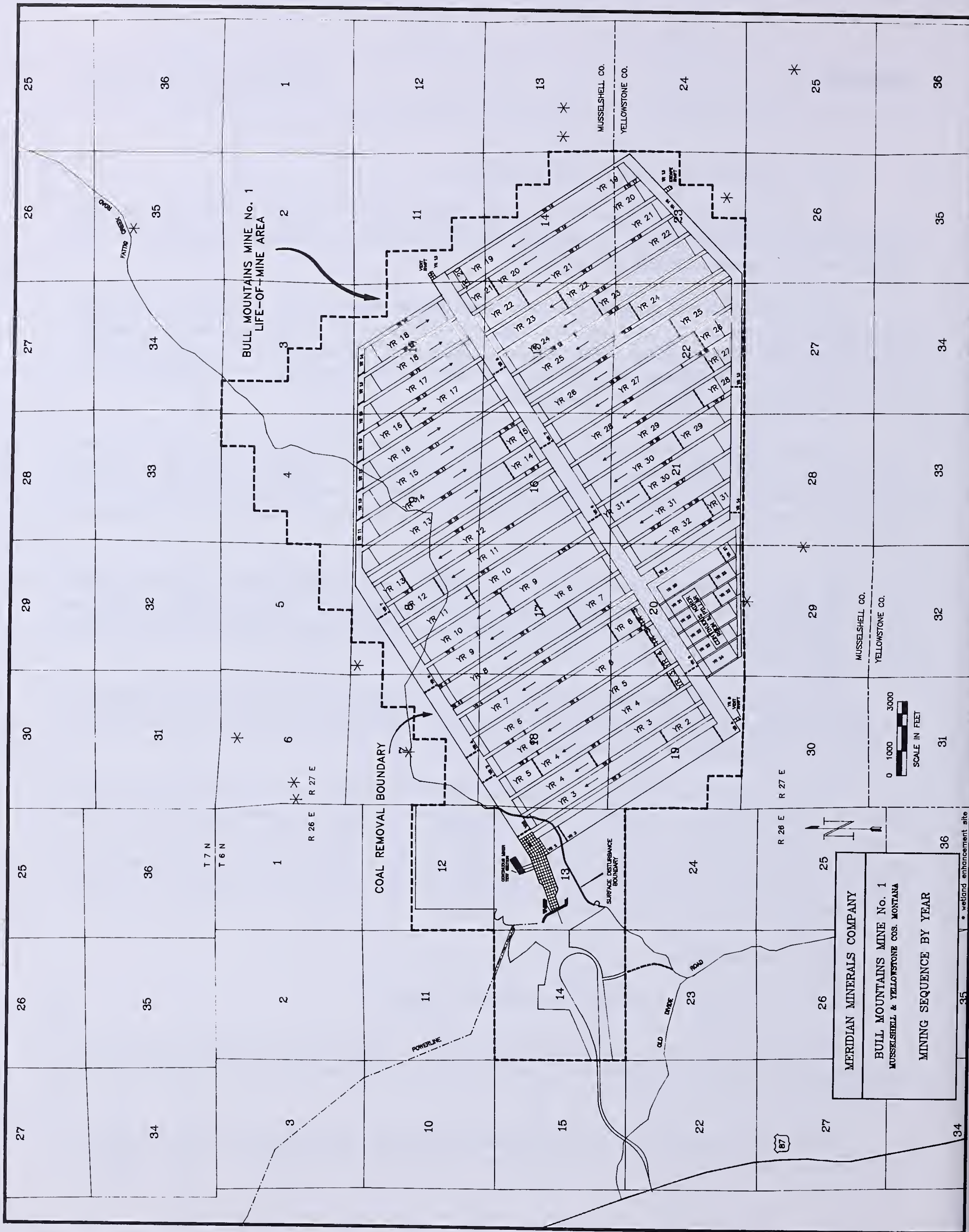
During the 30 years of full coal production, ROM coal removal would increase from the initial rate of 1.36 million tons per year (1.18 million tons of clean coal), to a maximum rate of 3.79 million tons per year (3.30 million tons of clean coal). (NOTE: the increased efficiency of Phase 2 coal preparation facilities compared to the Phase 1 facilities would increase the amount of clean coal per ton of ROM coal.) With a 24-hour workday and 340 workdays per year, maximum production during full-scale operations would require about 465 tons of ROM coal to be mined each hour (11,156 tons per day).

3. Coal Transportation

a. Temporary truck haul to the Huntley loadout

During Phase 1 mining activities (the approximate 2-year period of permanent facility and rail spur construction) coal would be hauled 41.1 miles over County and State roads to the upgraded Montana Rail Link loadout facility near Huntley.

Haul trucks would travel along Fattig Creek Road from the mine and then down Old Divide Road to its southern intersection with U.S. 87 (see Figure I-2). They would follow U.S. Highway 87 south


MERIDIAN MINERALS COMPANY
BULL MOUNTAINS MINE No. 1
MUSSELSHELL & YELLOWSTONE COS. MONTANA
MINING SEQUENCE BY YEAR
* wetland enhancement site
BULL MOUNTAINS MINE No. 1 LIFE-OF-MINE AREA
COAL REMOVAL BOUNDARY
SURFACE DISTURBANCE BOUNDARY
MUSSELSHELL CO.
YELLOWSTONE CO.
FATTIG CREEK ROAD
OLD DIVIDE ROAD
POWERLINE
T 7 N
T 6 N
R 26 E
R 27 E
0 1000 3000
SCALE IN FEET
VENT SHAFT
ESCAPE SHAFT
YR 2
YR 3
YR 4
YR 5
YR 6
YR 7
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YR 31
YR 32
87

Figure A-9 Mining sequence by year

to Highway 312, then east to Huntley. In Huntley, trucks would proceed south along Heath Street to the loadout site (see Figure A-3).

Loadout capacity at the upgraded Huntley facility (750 tons per hour) would allow one 115-car unit train to be loaded in 16 hours. With an average capacity of 11,500 tons of coal per train (100 tons per car), maximum production would require 95 unit trains to be loaded each year (1 train every 3 to 4 days).

Twelve highway-rated trucks with tandem trailers would operate 24 hours per day, 340 days per year. With an average capacity of 37.8 tons of coal per truck, maximum production would require 29,100 loads to be trucked to the Huntley loadout each year. The 82-mile round trip to the loadout is expected to take at least 2.2 hours to complete, requiring each truck to make 7 to 8 trips each day (1 truck every 15 to 17 minutes). Coal-related traffic along Heath Street in Huntley would be restricted to a maximum speed of 15 MPH, all truckloads would be protected from wind using tarps and/or special trailer designs, and, to minimize noise, the use of "jake" brakes would be prohibited. Pending formal regulatory approval by the U.S. Mine Safety and Health Administration (MSHA), the bulldozer and loader used in coal-handling operations would be equipped with strobe warning systems, replacing the standard backup alarm, to minimize noise during night operations. Night-hauling operations could be increased for short periods of time during heavy traffic periods (i.e., during beet harvesting) to reduce the overall levels of daytime traffic.

b. Full production train delivery of coal

During Phase 2, after permanent processing and rail spur facilities had been constructed, coal from the proposed mine would be loaded directly into trains at the main facilities area. Activities at the coal loadout in Huntley would be phased out and the facility closed.

The unit train loadout station would consist of a 300 ton surge bin with an automatic weighing system for accurately loading rail cars. Coal would discharge into the surge bin from the clean coal stockpile conveyor and pass through gates to a 100-ton weigh bin. The weigh bin would discharge through a loading chute directly to the rail cars.

The loadout capacity at the rail loop facility would allow one 115-car, unit train to be loaded in 2 to 3 hours (5000 tons per hour). With an average capacity of 11,500 tons of coal per train (100 tons per car), maximum production would require 287 unit trains to be loaded each year (1 train every 1 to 2 days).

c. Local market truck/package delivery of coal

Throughout the 33 years of coal production, coal would continue to be supplied to those local markets currently served by PM Mine. Truck/package coal delivery during Phase 1 of mining activity (the first 2 years of permanent, Phase 2, facility construction) would use existing PM Mine facilities. Phase 2 package delivery would use a newly-constructed series of 20-ton bins along one side of the coal preparation plant to store various product mixes according to demand. Clean coal would be transferred to the appropriate bin by an in-plant conveyor system and customer haul trucks would drive under the bin for loading. A weigh scale would record the truck's weight both before and after loading for billing purposes.

F. RECLAMATION PLAN

Development, mining, and reclamation plans are interdependent to assure that reclamation for each component of the Project might be performed at the earliest possible time. Reclamation activities fall into one of 2 categories: interim (temporary) and final (permanent). Interim activities are those intended to stabilize an area during its short-term use in the mining operation, while final activities are those intended to return the area to its long-term condition before releasing a company's responsibility.

Interim reclamation activities would occur primarily during the first 3 years of the mine, after premining development was complete. They would occur on a smaller scale throughout the remainder of the mine life, as other components of the Project came into play. Final reclamation activities would begin immediately after the need for a particular Project component was over. In the case of the powerline upgrade/extension and other temporary disturbance activities (e.g., exploratory drilling activities, hydrologic mitigation activities, wetland enhancement), final reclamation would occur immediately after construction activities were complete. This would occur in year 1 of the mine for the powerline upgrade/extension. Final reclamation would occur in year 3 of the Project for the Huntley loadout, the rail spur right-of-way outside the roadbed and adjoining fire guards, and those portions of the PM Mine operation not being used for Phase 2 coal production. Final reclamation at the WDA would occur in stages, as portions of the area reached final grade (possibly as early as year 9 of the mine). Final reclamation of all remaining mining-related disturbances (i.e., the main facilities, the WDA, the mine portals, the rail spur right-of-way) would not begin until the end of underground mining activities in year 33 of the mine.

Interim/final reclamation and bond release would proceed as follows:

Year 0 - End of the useful service life for a particular Project component, or portion thereof.

Year 1 - Backfilling; regrading; topsoil replacement; recontouring; drainage control; revegetation; and bond release, when appropriate (up to 60 percent of original bond amount for that component).

Year 3 - Vegetation established; and bond release, when appropriate (that portion of the original bond amount for topsoil replacement).

Year 11+ - Vegetation sampling; and bond release, when appropriate (remaining bond amounts for that component, if reclamation was successful and bond release requirements were fully met).

1. Postmining Land Use

Primary historical land uses for the Bull Mountains area, including the area of the proposed rail spur, have been cattle production and year-round wildlife habitat. Other land uses have been hay production, timber production, coal mining, and recreation. Reclamation efforts throughout the life-of-mine area, and on outlying wetland enhancement areas, would return most postmining surface uses to livestock grazing and wildlife habitat.

Some ranching operations would be eliminated during the period of active mining operations. This would occur within the surface facility complex (including the WDA), along the rail spur right-of-way, and in other small areas designated for hydrologic mitigation, wetland enhancement, or other revegetation mitigation. Ranching operations along the powerline easement would be temporarily disrupted during the actual upgrade and extension activities. Other ranching operations within the life-of-mine area should continue uninterrupted. Revegetated areas that were judged to be capable of withstanding grazing pressures would again be incorporated into ranching activities.

Other than a small acreage of improved pastureland associated with past reclamation at the PM Mine, and a small area in the proposed WDA, there are no improved rangelands, croplands, or pasturelands within the proposed life-of-mine area. Neither are any proposed for postmining land use. Croplands and pasturelands disturbed along the rail spur right-of-way would not be replaced since the spur would be reclaimed in place after the end of mine service.

Industrial development has been the historical land use at the Huntley loadout. Use would continue according to the long-term plans of Montana Rail Link after proposed coal loadout operations had been completed.

2. Postmining Topography

Premining elevations in the proposed life-of-mine area range from 3,790 to 4,710 feet above mean sea level. Premining elevations in the WDA range from 3,850 to 4,050 feet, while elevations in the rock quarry range from 3,990 to 4,050 feet. Premining elevations in the main facilities area, including the existing PM Mine, range from 3,800 to 3,970 feet.

Postmining elevations in the WDA (including the rock quarry) are expected to rise from 0 to 130 feet -- to a maximum 4,050 feet above sea level. This reflects the net raising of the landscape resulting from "head of hollow" filling that would take place. All regraded areas in the WDA would be constructed with maximum slopes of 3 horizontal to 1 vertical (3h:1v), except for the bench faces which would be constructed with maximum 5h:1v slopes. New drainage patterns, channels, and floodplains in the WDA would be constructed with sufficient capacity to carry flow from a 100-year, 24-hour precipitation event at nonerodible velocities. Additional channel stability would be achieved through a high degree of compaction and revegetation. Figure A-10 shows premining topography and slopes of the WDA. Figure A-11 shows postmining topography, slopes, and vegetation after backfilling and regrading.

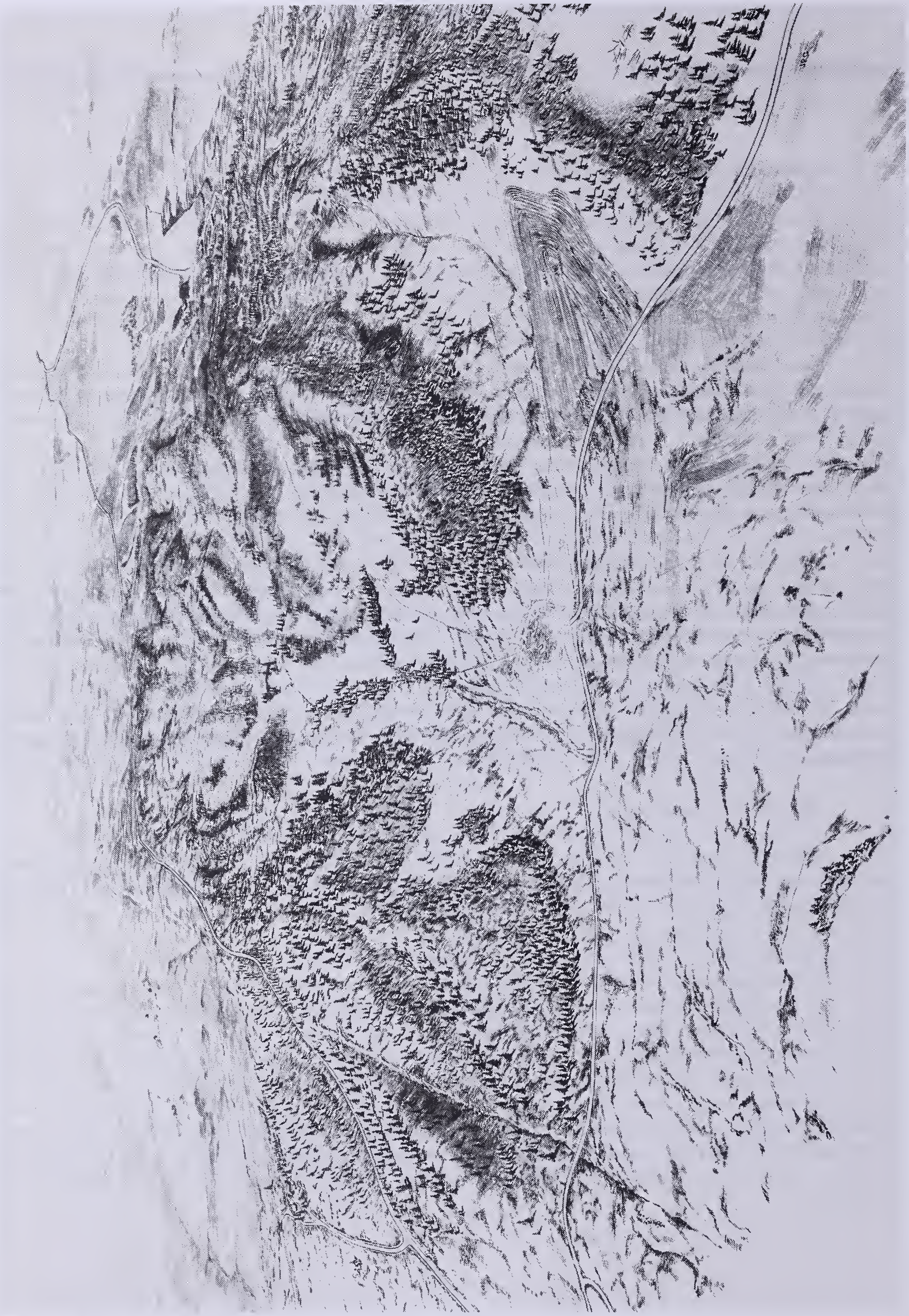


Figure A-10 An isometric view of premining topography in the waste disposal area.

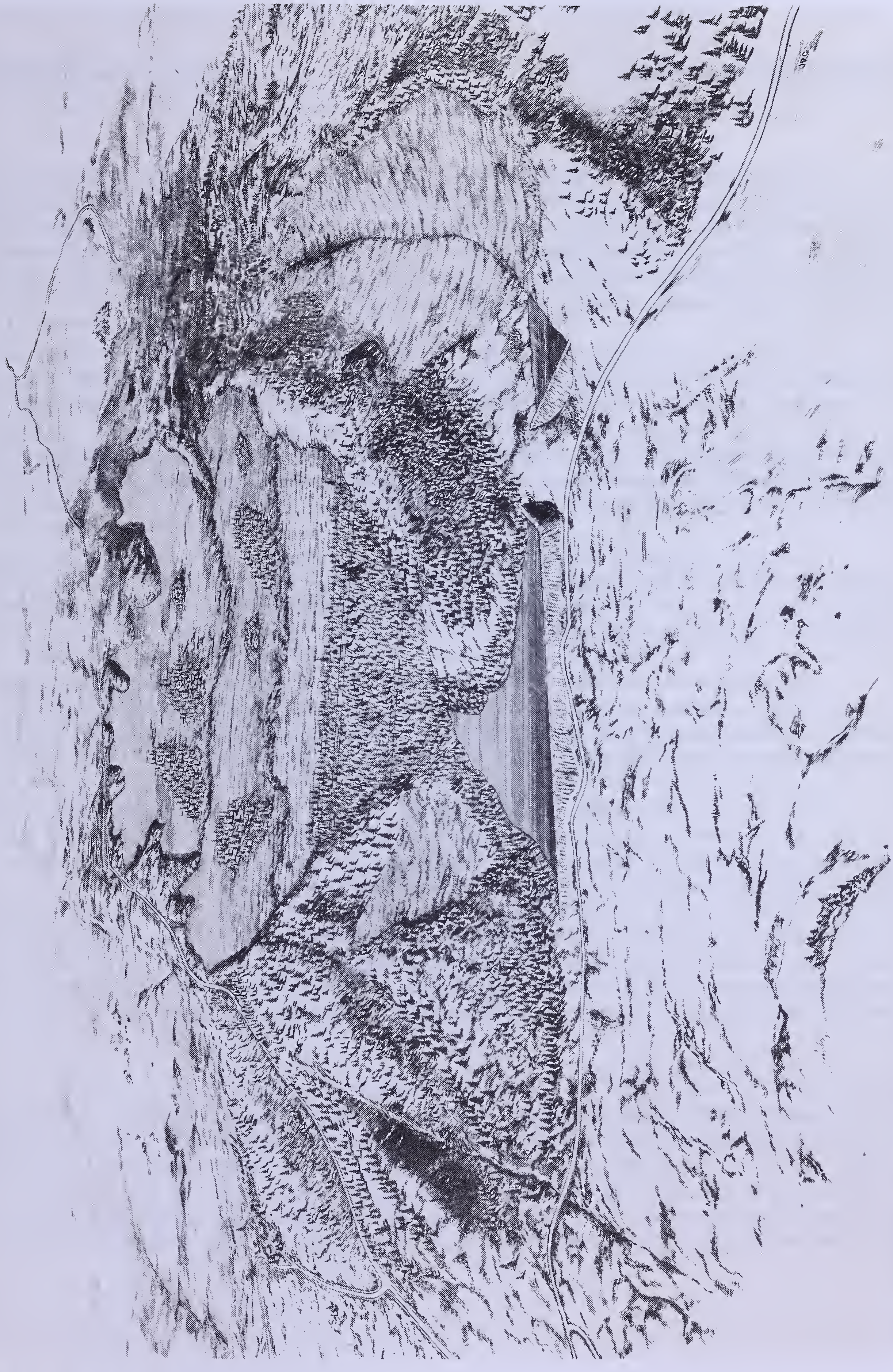


Figure A-11 An isometric view of postmining topography in the waste disposal area

Postmining elevations in the main facilities area would be expected to approximate original elevations and contours except in the area of the existing PM Mine. Elevations in the area of the old surface mine pit would rise about 60 feet from backfilling and regrading. Drainage channels and floodplains would be re-established throughout the area with sufficient capacity to carry flow from a 100-year, 24-hour precipitation event at nonerodible velocities. Postmining contours in this area would also blend with adjacent premining topography as much as possible.

Elevations in coal removal and buffer areas of the life-of-mine area would essentially remain unchanged, although local surface impacts from mining-related subsidence are expected in the coal removal area. Postmining contours in those areas where limited surface disturbance is proposed (i.e., for access roads, ventilation shafts, exploration drill holes, hydrologic mitigation, and wetland enhancement) would approximate original contours at or near original elevations. Drainage channels and floodplains would be re-established throughout each disturbance area with capacity to carry flow from a 100-year, 24-hour precipitation event at nonerodible velocities.

Postmining topography on private land along the rail spur right-of-way would be changed permanently since the roadbed would be abandoned in place after the removal of the rail, ties, and road ballast. State parcels would be regraded to approximate original contours and completely revegetated to Montana DSL Land Division standards.

All newly-constructed roads, including the WDA haul road and the various light use/temporary roads, would be reclaimed and road surface materials salvaged. Fill portions would be regraded into cut areas, subsoil and topsoil would be replaced, and the disturbed areas reseeded. Existing roads/trails would be restored to original condition and reseeded at the end of their use.

All exploration holes, wells, ventilation shafts, and other exposed underground openings would be permanently sealed or plugged when no longer needed for mine operation. Any mine entry that was temporarily inactive but had future useful life would be protected by barricades or other covering devices, fenced, and posted with signs to prevent access and to identify the hazard.

Facilities for hydrologic mitigation and wetland enhancement programs would be left intact and operational. Final disposal of those portions of the rail spur right-of-way outside the life-of-mine area and not on State-owned land would involve removal and salvage of the ties, rail, and ballast. Fill material used to prepare the base grade for the rail spur would be abandoned in place.

3. Backfilling and Grading

Rough backfilling and grading would be completed on all disturbed areas within the life-of-mine area and at the Huntley loadout, as soon as possible after they were determined unnecessary for mining-related activities. During the period of active mining operations, backfilling and grading would be required only in those disturbed lands at the PM Mine unnecessary for Phase 2 operations, the WDA, or in temporary-use areas. After ending mining operations, backfilling and grading would be required for all disturbed areas within the life-of-mine area not already included in the reclamation program.

Access roads, haul roads, and the rail loop would be regraded by pushing the fill portion of each area into the cut portion. Highwalls throughout the life-of-mine area would be all but eliminated by backfill operations with contours established so that slopes were less than 3h:1v. The highwall portion of the surface facilities area would be eliminated after the portals had been plugged. The majority of the excess spoil pile would be graded into the cut area, against the highwall. Reclamation grading plans would be designed based on a net swell factor of 10 percent, allowing for recompaction during grading by reclamation equipment.

No permanent sedimentation impoundments are proposed to remain after reclamation operations. Sediment and storage ponds would be backfilled and graded upon final reclamation.

Rough grading of those portions of the rail spur outside the life-of-mine area between the fire control barrier and the edge of the right-of-way would occur immediately after construction activities were complete. Limited backfilling and grading would occur on those portions being used as railbed and fire barrier upon final reclamation.

The grading program would be designed to create an undulating topography. Dozers and scrapers would be used to backfill and rough-grade and finish-grade each area to about 1 foot below the postmining contour to approximate premining contour. The ground would be ripped both before and after the subsoil and topsoil had been redistributed. Ripping would be performed on the contour where possible, and to a minimum depth of 12 inches. A ripper or deep shank plow would be used.

Within the life-of-mine area and at the Huntley loadout, the top 4 feet of overburden/backfilled material would be composed of material suitable for revegetation. In addition, all slopes of reclaimed areas would be constructed compatibly with adjoining undisturbed areas and postmining land use.

4. Backfilling (Special Handling)

Certain unsuitable material in the spoil (e.g., highly carbonaceous units, acid-forming material, coal rider seams) would be selectively handled. This material would be placed below the vegetation rooting zone, above the ground water potentiometric surface, and outside the area of drainage channels or their floodplains. Regraded spoil in the main facilities area and mine portal area would be sampled to a depth of 8 feet (0 to 4 feet and 4 to 8 feet) at a density of 1 hole per 300 feet on a square grid basis. The regraded spoil samples would identify any spoil materials considered unsuitable for vegetation establishment.

Unsuitable mine development and coal-processing waste (e.g., coal fines, rock) would be placed in the WDA. Sampling for potential "hot spots" would precede soil laydown. Following compaction, the waste material in the WDA would be sampled to a depth of 4 feet at 1 hole per 150 feet on a square grid basis. It would be covered by a 4-foot layer of topsoil and subsoil material.

Regraded spoil and WDA waste material samples would be analyzed for unsuitable material using a saturated paste extract. Should any sampled materials prove unsuitable for revegetation, additional sampling would locate the exact area of unsuitable material. These areas would be eliminated by either deep ripping and blending, adding supplements, or removing the unsuitable material and replacing it.

5. Topsoil Replacement

Topsoil would be spread uniformly across all disturbed life-of-mine areas to a depth of about 15 inches, after backfilled material had been graded to slightly more that 1 foot below final elevation, and deep ripped on the contour. Topsoil/subsoil stockpiled at the Huntley loadout would be used to backfill the sediment pond.

Along those portions of the rail spur right-of-way outside the life-of-mine area, available topsoil would be respread over graded, unripped slopes between the fire control barrier and the edge of the right-of-way immediately after construction. No topsoil would be replaced on those portions being used as railbed and fire barrier during final reclamation except on State-owned parcels.

After being respread, topsoil would be graded to final contours required to establish the postmining topography. Replacement would be accomplished by scrapers and/or dozers, and grading by rubber-tire graders. To prepare an adequate seedbed, the soil would be tilled after final grading.

6. Revegetation Operations

All lands disturbed within the life-of-mine area, Huntley loadout, and State-owned portions of the rail spur right-of-way would be revegetated. Seven postmine vegetation communities (grassland, shrub, ponderosa pine, mixed grassland-shrub, improved pasture, agriculture, and wetlands) would be re-established, where appropriate, within the life-of-mine area. The mixed grassland-shrub vegetation type would be re-established in the area of the regraded sedimentation pond at the Huntley loadout. The improved pasture and other appropriate vegetation types would be established along the proposed rail spur right-of-way outside the life-of-mine area.

No revegetation activities are proposed along the powerline easement, outside of the life-of-mine area. Final revegetation would rely on the natural invasion of species from nearby undisturbed communities.

All seedings would take place within 90 days of soil replacement if possible. Otherwise they would occur immediately prior to, or during, the most favorable period for plant growth. To take advantage of late fall, winter, and early spring moisture, fall seedings would take place from October 1 to freeze-up. Spring seedings would begin after spring thaw and continue until early May. Both drill seeding and broadcast seeding would be used, depending upon time of year, soil texture, vegetation species, and slope. Rates for drill seeding would range from 15 to 35 pounds of pure live seed per acre, or at least 30 seeds per square foot. Where broadcast seeding was used, seeding rates would double the rates used for drilling. If an area were not ready for revegetation in the early spring or late fall, it would be rough-tilled and mulched. Cover crops of annual grain may be planted at rates of from 10 to 15 pounds per acre in conjunction with seedings of perennials.

Mulch would be used at reclaimed sites, as needed. Straw mulch would be used at a rate of 1.5 tons of clean straw or hay per acre and anchored by a crimper. Artificial mulches, such as hydromulch, rock riprap, jute netting, excelsior, and paper-net mulch, would be used when stubble or straw mulch was not sufficient.

A total of 8 seed mixtures are proposed for use in revegetation activities. The first 7 mixes would provide the basis for the permanent re-establishment of major premining vegetative communities in the life-of-mine area, the Huntley loadout, and State-owned portions of the rail spur. Mixture No. 5 is proposed for the permanent stabilization of non-State-owned portions of the rail spur right-of-way outside the life-of-mine area. Mixture No. 8 is proposed for use in temporary revegetation and stabilization throughout the Project area.

Seed mixture No. 1, the grassland revegetation mixture, would be used to restore the disturbed, premine green needlegrass/western wheatgrass, needle-and-thread grass/western wheatgrass, bluebunch wheatgrass/needle-and-thread grass, and little bluestem/prairie sandreed communities throughout the area. It would consist of: thickspike, western, and slender wheatgrass, blue grama, prairie junegrass, Sandberg bluegrass, needle-and-thread grass, green needlegrass, common yarrow, purple prairie clover, spotted gayfeather, Lewis flax, prairie coneflower, and scarlet globemallow. (Note: Scientific names for all of the proposed revegetation species can be found in Table A-2.)

Seed mixture No. 2, the shrub revegetation mixture would be used to restore the disturbed, premine fragrant sumac/bluebunch wheatgrass, silver sagebrush/green needlegrass, and western snowberry/green needlegrass communities throughout the area. It would consist of: thickspike, western, and slender wheatgrass, blue grama, Sandberg bluegrass, needle-and-thread grass, green needlegrass, common yarrow, Lewis flax, prairie coneflower, scarlet globemallow, silver sagebrush, Wood’s rose, and western snowberry.

Seed mixture No. 3, the ponderosa pine revegetation mixture, would primarily be used to restore the disturbed, premine ponderosa pine/bluebunch wheatgrass and ponderosa pine/western snowberry communities throughout the area. It would consist of: thickspike and slender wheatgrass, Indian ricegrass, Sandberg bluegrass, needle-and-thread grass, green needlegrass, common yarrow, Lewis flax, arrowleaf balsamroot, prairie coneflower, scarlet globemallow, Wood’s rose, and western snowberry. Ponderosa pine seedlings would be planted in association with this mixture to re-establish the tree component of these communities.

Seed mixture No. 4, the mixed grassland/shrub revegetation mixture, would primarily be used to restore the disturbed, premine burned ponderosa pine community throughout the area. It would consist of: thickspike, western, and bluebunch wheatgrass, little bluestem, prairie sandreed, Indian ricegrass, green needlegrass, needle-and-thread grass, common yarrow, Lewis flax, arrowleaf balsamroot, spotted gayfeather, Wood’s rose, and fragrant sumac.

Seed mixture No. 5, the improved pasture revegetation mixture, would be used to restore disturbed, premine tame pastureland community within the life-of-mine area and those portions of the rail

TABLE A-2

Revegetation Species for the Proposed Bull Mountains Mine No. 1 and Associated Facilities

Grasses:		**Forbs:**	
Agropyron cristatum	crested wheatgrass	Achillea millefolium	common yarrow
Agropyron dasystachym	thickspike wheatgrass	Balsamorhize saqittata	arrowleaf balsamroot
Agropyron intermedium	intermediate wheatgrass	Dalea purpurea	purple prairie clover
Agropyron smithii	western wheatgrass	Liatrus punctata	spotted gayfeather
Agropyron spicatum	bluebunch wheatgrass	Linum lewisii	Lewis flax
Agropyron trachycaulum	slender wheatgrass	Medicago sativa	alfalfa
Agrostis stolonifera	red-top grass	Ratibida columnaris	prairie coneflower
Bouteloua gracilis	blue grama	Sphaeralcea coccinea	scarlet globemallow
Calamovilfa longifolia	prairie sandreed		
Koleria cristata	prairie junegrass	**Shrubs:**	
Lolium multiflorum	Italian ryegrass	Artemisia cana	silver sagebrush
Oryzopsis hymenoides	Indian ricegrass	Rhus trilobata	fragrant sumac
Poa sandbergii	Sandberg bluegrass	Rosa woodsii	Wood's rose
Andropogon scoparius	little bluestem	Symphoricarpos occidentalis	western snowberry
Stipa comata	needle-and-thread grass		
		Trees:	
Grass-like:		Pinus ponderosa	ponderosa pine
Carex nebraskensis	Nebraska sedge		
Carex vulpinoidea	unnamed sedge		
Eleocharis palvstris	spikerush		
Scripus volidus	soft-stem bulrush		
Typha latifolia	broad-leaved cattail		

spur right-of-way that lie outside the life-of-mine area. It would consist of: crested and intermediate wheatgrass.

Seed mixture No. 6, the agriculture revegetation mixture, would be used to restore disturbed, premine agricultural lands intensively managed for forage crops within the life-of-mine area. It would consist of: alfalfa.

Seed mixture No. 7, the wetland mixture, would be used for the restoration of the wetland communities throughout the area, particularly the hydrologic mitigation and wetland enhancement sites. It would consist of: red-top grass, Nebraska sedge, an unnamed sedge, fowl mannagrass, spikerush, softstem bulrush and broadleaf cattail.

Seed mixture No. 8, the interim revegetation mixture, is made up of rapidly-establishing, drought-tolerant grasses. It would be used as a temporary cover for stabilization purposes around facilities, on settling ponds, and on topsoil/spoil stockpiles with a life of more than 6 months. This mix would consist of: thickspike, western, and slender wheatgrass, and Italian ryegrass.

Natural invasion and/or seeding would be used to re-establish the shrub components of the premine communities within the life-of-mine area. Ponderosa pine seedlings would be planted in pockets to re-establish the tree component of the disturbed, premine ponderosa pine/bluebunch wheatgrass and ponderosa pine/western snowberry communities, including the north face and top of the WDA. Natural invasion would be used to re-establish the shrub/tree components of those communities disturbed by linear facility development (e.g., rail spur construction, County road abandonment, powerline upgrade/extension) outside the life-of-mine area.

7. Revegetation Enhancement

Fertilization would occur during seeding operations, as needed. Before reseeding, routine representative soil samples would be taken to determine fertilization rates.

Where possible, broadcast-seeded areas would be chained, harrowed, multi-packed, or dozer-tracked to firm the seedbed and cover seed.

Weeds and pests would be controlled whenever they became a major problem. Herbicides could be used, but mowing of weeds before seed maturity would be the preferred control method.

Snow fences would be temporarily installed on sites tending to be dry or subject to wind erosion (i.e, tops of hills and windward slopes) and on sites where species diversity and seedling establishment could be aided by the concentration of winter moisture.

Final grading would include occasional use of small depressions to minimize erosion, trap sediment, conserve moisture and promote vegetation. These depressions would be field located during reclamation activities and would not restrict normal access through the reclaimed areas or constitute a hazard.

To the extent possible, soil materials would not be handled under unduly moist or wet conditions in order to avoid compaction. Similarly, soil handling would be avoided during extremely dry conditions to reduce the potential for excessive erosion. Topsoil would be hauled directly from the stripping area to the final revegetation site, when possible.

Contour furrows would be employed along the highwall reclamation area, and installed prior to seeding.

Alternative erosion control techniques would include use of barriers, check dams, erosion stops, matting and roughened surfaces. These treatments can be implemented with various kinds of straw bales, netting, and matting to effectively reduce overland flow. If gullies deeper than 9 inches should form, the gullies would be blocked with one of the above-mentioned treatments and given the opportunity to stabilize naturally, by vegetation growth.

Temporary fences would ensure protection from trampling and grazing by cattle for all areas that had been revegetated, until the plant communities were mature enough to withstand grazing pressure. Grazing would occur at least 2 years during the last 5 years of responsibility for vegetative establishment. Permanent postmining fences would be built to achieve the goals of future land management systems.

8. Hydrologic Mitigation

Water resources at 42 of the 130 existing springs and seeps in the Bull Mountains area could be disrupted by mining-related subsidence (Table III-3). Impacts to these resources would be mitigated through the use of interim water supplies, repair of shallow surface fractures, horizontal drains, vertical wells, guzzlers (see Guzzlers, below), ponds (reservoirs), and/or supplementation using water distribution systems (see Table A-3). The selection of mitigation techniques would depend on 7 factors: 1) Current management of the resource, 2) existing level and mode of development, 3) water source(s) (alluvium, shallow bedrock, deep bedrock), 4) seasonality of water availability and flow volume, 5) topographic characteristics, 6) mitigation goals, and 7) potential for mitigation success.

Short-term, temporary, and long-term/permanent mitigations are included in the overall plan. Short-term mitigation would include those activities conducted prior to impact, and as immediate responses to impacts. Temporary mitigation would phase into long term/permanent mitigation depending on the success of a particular technique employed. Mitigation plans at these springs would follow a multi-step process, initiated in separate phases throughout mine life: 1) an interim water supply would be established; 2) shallow surface fractures affecting the existing hydrologic feature would be repaired, when appropriate; and, if necessary, 3) a permanent replacement or supplemental water source would be developed. Horizontal drains would be installed at most springs, but vertical wells, ponds, or water distribution systems would be used as needed.

The 88 remaining springs or seeps that are not believed to be at substantial risk would be monitored for mining-related effects (see Hydrologic Monitoring and Table A-3). Monitoring would be implemented during premining, mining, postmining, and reclamation phases to measure mining related effects and mitigation success. If monitoring indicated that any of those springs were impacted by

TABLE A-3

Bull Mountains Mine No. 1
Hydrologic Mitigation Plan

Station	Surface Fracture Repair	Pond Repair	Pond Enlarge	Pond New	Horizontal Drain	Shallow Well	Deep Well	Guzzler	Distribution System	Comments
14115					X					
14155					X					
14165				X					X	From Spring 14155
14255	X	X							X	From Spring 14115
14325	X	X							X	From Spring 14115
14415	X		X							
14535	X	X							X	From Spring 14115
14555	X				X					
16135					X					
16145					X					
16165					X					
16255	X								X	From Spring 16135
16275	X	X			X					
16355	X								X	From Spring 16135
16365	X			X					X	From Spring 16135
16625	X				X					
16655	X	X							X	From Spring 16135
16755	X							X		
16855	X							X		
16955	X			X						
17415	X	X					X			
17515	X	X							X	From Spring 17415

TABLE A-3 (Continued)

Station	Surface Fracture Repair	Pond Repair	Pond Enlarge	Pond New	Horizontal Drain	Shallow Well	Deep Well	Guzzler	Distribution System	Comments
17635		X			X					
17655	X	X					X			
17685	X	X							X	From Spring 17655
52125	X	X			X					
52145	X	X			X					
52225	X	X			X					
52235	X				X					
52255	X				X					
53115	X					X				
53125	X					X				
53145	X				X					
53155	X				X					
53175	X	X							X	From Spring 53115
53225	X				X					
53245	X				X					
53525	X				X					
53535	X	X			X					
53545	X			X						
71115	X				X					
71125					X					
Maximum Cumulative										
Numbers	34	15	1	4	22	2	2	2	11	
Acres	3.4	15.0	1.0	4.0	2.2	2.0	4.0	4.0	15.0	52.6 Acres

mining-related activities, an appropriate mitigation method would be implemented in consultation with Montana Department of State Lands (DSL).

Wells, springs, ponds, and distribution systems would require maintenance, repair, and replacement, to varying degrees. These would be provided for by creation of a permanent trust funded by Meridian and guaranteed by the reclamation bond. The trust principal would be deposited in an account in the State non-expendable trust fund. The principal of the trust would be established in an amount projected to ensure that maintenance, repair, replacement, and operating costs could be paid from trust income. In addition, a portion of the income would be dedicated to the principal in an amount projected to be sufficient to maintain the real value of the principal. The trust would be administered by Montana DSL or any successor agency.

a. Interim water supply

Livestock and wildlife drinking water would be replaced on an interim basis when a negative change in water quantity affecting the hydrologic function was detected at a spring, wetland, and/or pond as a result of mining-related activities. Water would be hauled by truck to temporary or existing stock tanks as needed to insure uninterrupted water supplies. Depending on the land use of the impacted area, some other rapid response approach may be implemented, as approved by Montana DSL. To minimize disturbance, temporary stock tanks would be located near the disrupted water source.

b. Fracture repairs

When negative changes in water quantity were associated with shallow, surface-subsidence fractures or cracks, the damage would be repaired, as appropriate. Depending on the type of spring or seep involved, low-permeability fill material, synthetic pond liners, porous gravel filter material, perforated pipe, or native material would be installed. About 0.1 acre would be disturbed during the fracture repair operation at each spring. Since fracture repair could occur at 34 springs/seeps, the maximum cumulative disturbance associated with fracture repair would be 3.4 acres.

c. Horizontal drains

New horizontal drains would be used to mitigate impacts at 22 springs and seeps (see Table A-3 and Figure A-12). Targeted springs are those located in the higher portions of the drainage basins where horizontal drains could tap the shallow fractured and weathered bedrock zone. They would range in length from about 50 to 250 feet and would be constructed with 2-inch, PVC pipe or other suitable material. About 0.1 acre would be disturbed during the installation of each drain. The maximum cumulative disturbance associated with drain development would be about 2.2 acres. Water storage and delivery systems would be built with each drain. Cut-and-fill material for drain development would be equally balanced to eliminate excess material. The disturbed area would be immediately revegetated and enclosed with barbed-wire fencing to limit public/livestock access.

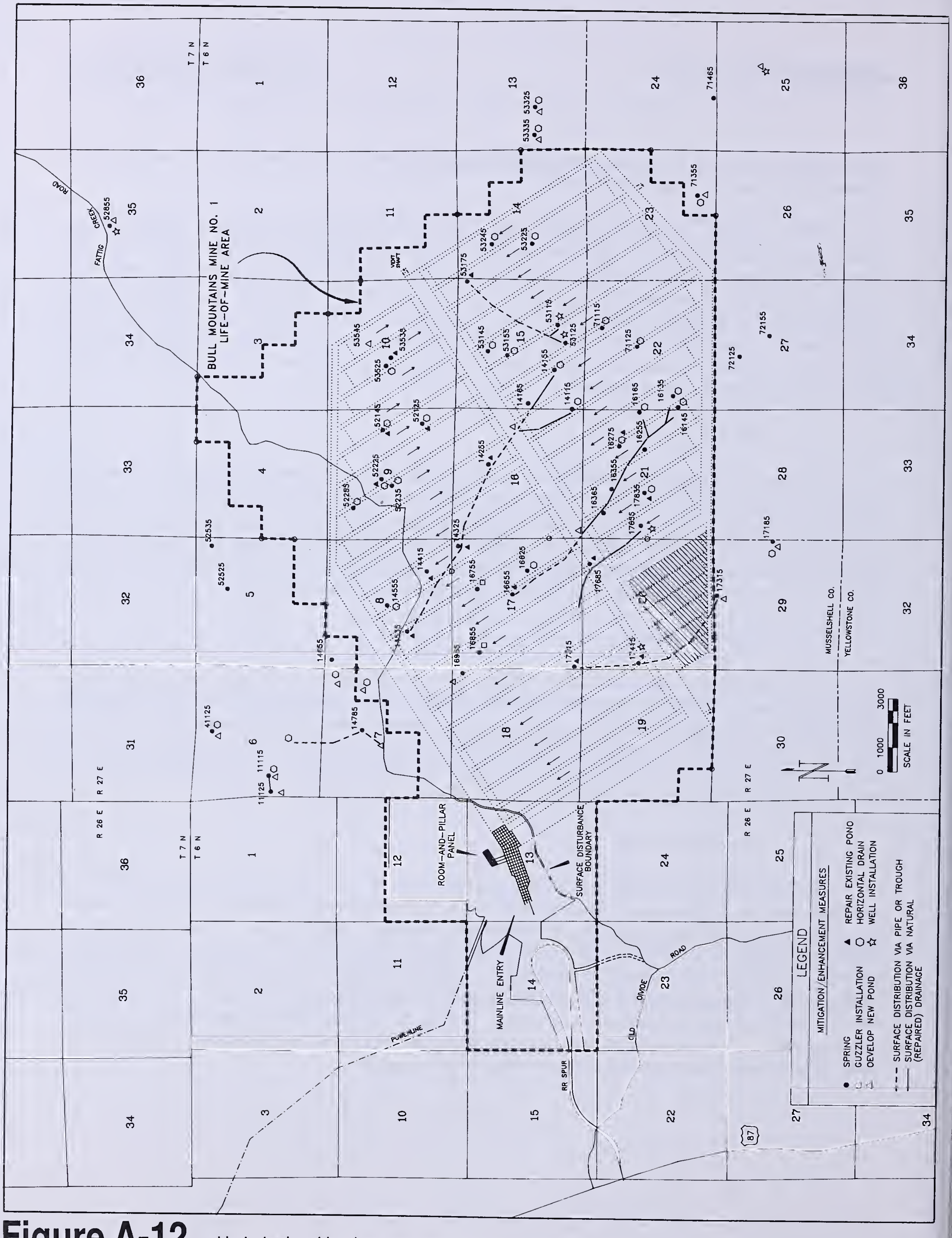

BULL MOUNTAINS MINE NO. 1
LIFE-OF-MINE AREA
ROOM-AND-PILLAR PANEL
SURFACE DISTURBANCE BOUNDARY
MAINLINE ENTRY
VENT SHAFT
FATTIG CREEK ROAD
OLD DIVIDE ROAD
RR SPUR
PIPELINE
87
MUSSELSHELL CO.
YELLOWSTONE CO.
T 7 N
T 6 N
R 26 E
R 27 E
0 1000 3000
SCALE IN FEET
LEGEND
MITIGATION/ENHANCEMENT MEASURES
● SPRING
▲ REPAIR EXISTING POND
GUZZLER INSTALLATION
○ HORIZONTAL DRAIN
DEVELOP NEW POND
☆ WELL INSTALLATION
SURFACE DISTRIBUTION VIA PIPE OR TROUGH
SURFACE DISTRIBUTION VIA NATURAL (REPAIRED) DRAINAGE

Figure A-12 Hydrologic mitigation and wetlands enhancement program

d. Wells

New vertical wells would be used to mitigate impacts at 4 springs and seeps (see Table A-3 and Figure A-12). Two shallow wells, ranging from 50 to 100 feet, would tap the shallow fractured and weathered bedrock in those areas where access or topography preclude the use of horizontal drains. Two deep wells, ranging in depth from 600 to 700 feet, would tap the underburden sandstones below the Mammoth coal seam, in those areas where subsidence-related fracturing had dewatered the shallow ground water system.

Disturbance associated with shallow well development would range from 0.25 to 1 acre per site. The deep wells could disturb as much as 3 acres during installation activities. The maximum cumulative disturbance associated with well development would be about 8 acres. Cut-and-fill material from well development would be equally balanced to eliminate excess material. The disturbed area would be immediately revegetated and enclosed with barbed-wire fencing to limit public/livestock access.

If appropriate, wells would be located along fencelines to provide maximum flexibility for livestock operators. All wells would be drilled and cased with 4.5- to 5-inch (inside diameter), steel, PVC, or other suitable pipe. Electric pumps would be used on the 2 deep wells and windmills would be used on the 2 shallow wells. Water storage and delivery systems would be built for each well.

e. Guzzlers

Newly-constructed guzzlers would be used to mitigate impacts at 2 isolated springs (see Table A-3 and Figure A-12). Guzzlers are permanent, self-filling water devices that catch and store rain water in a manner similar to a cistern. Installation of a guzzler would consist of a collecting apron, an enclosed, watertight storage tank, and a water-delivery system. Guzzlers would provide limited quantities of water in those areas where historic spring flow has been minimal and seasonal.

They are generally located in areas with gentle slopes and deep soil to permit burial of the storage tank. Collecting aprons consist of about 1,000 to 5,000 square feet of corrugated fiberglass or galvanized steel, elevated about 1 foot above the ground on a wooden or metal framework. Rainwater would be intercepted and drained from the sheeting into a collecting trough. It would then be piped into a large, 10,000 to 20,000 gallon, buried fiberglass storage tank. When needed, the stored water would be piped downslope from the tank by gravity flow to a small, 100-gallon trough/drinking pan, placed at ground level. The actual release of water into the trough would be controlled by a float-and-foot valve installed in the water line between the storage tank and the trough.

Disturbance from guzzler construction would range from one-half to 2 acres per site for a maximum cumulative disturbance of about 4 acres. Cut-and-fill material associated with guzzler development would be equally balanced to eliminate excess material. The disturbed area would be revegetated immediately and enclosed with barbed-wire fencing to limit public/livestock access.

f. Ponds (Reservoirs)

Newly-constructed ponds or reservoirs would be used to mitigate impacts at or near 4 springs and seeps. In addition, the existing pond at spring 14415 would be enlarged, and the existing ponds at 15 other springs may require repair (see Table A-3 and Figure A-12). Ponds would be used to collect and store surface water from direct runoff and from discharge from horizontal drains or vertical wells. Stored water would be used for replacement and augmentation of both spring flow and wetlands.

New ponds would be developed by excavating and constructing a dam or embankment directly across the drainage. Enlargement or repair of existing ponds would be accomplished by excavation and repair of the existing structure or the placement of a new dam across the valley bottom.

Disturbance from pond construction or repair would range from 0.1 to 1.0 acres per site, with a maximum cumulative disturbance at 20 sites of about 20 acres. All new embankments would be constructed by excavating a core trench into alluvial/colluvial material and compacting the backfill in 2-foot lifts. Water-holding capacity of all reservoirs (ponds) would be enhanced by deepening catchment or by installing diversion trenches to direct surface runoff waters into the basin. New construction or excavation would also incorporate the use of bentonite to reduce seepage loss. All impoundment designs would include spillways constructed to safely pass the excess water flow from the 100-year, 24-hour runoff event. Cut-and-fill material from pond development would be equally balanced to eliminate excess material. A water delivery system would be built with each pond. Disturbed area would be revegetated immediately and certain portions enclosed with barbed-wire fencing to limit public/livestock access.

g. Water distribution systems

Newly-constructed pipelines, irrigation troughs, or natural drainages would deliver excess water supplies throughout the life-of-mine area. A total of 4.0 miles of pipelines and/or irrigation troughs and 3.5 miles of repaired natural drainages would be used to supplement interrupted water supplies at 11 springs and seeps (see Table A-3 and Figure A-12).

In the steeper portions of basins where there is historic, perennial flow, the natural stream channel would be used to distribute water to downstream ponds or reservoirs. If necessary, the flow system within the drainage would be enhanced and, where appropriate, shallow surface-subsidence cracks would be repaired to ensure water delivery.

Buried pipelines would be used to supply water to secondary sites in those areas where a horizontal drain, vertical well, or pond had been developed nearby, where sufficient unconsolidated material existed to allow easy excavation and minimal disturbance, and where a natural drainage could not be used. Irrigation troughs would be used in place of buried pipe where terrain or thin unconsolidated material was present. An advantage of pipelines and irrigation troughs is that they allow for the passage of water over subsidence cracks without loss. Each pipeline installation would consist of flexible pipe, buried at least 3 feet below the ground surface. Each irrigation trough installation would consist of an above-ground, open or closed pipe. Each secondary site would be developed with water storage and delivery systems as if it had a water source.

Individual pipeline/irrigation trough lengths range from a few hundred feet to a several thousand feet. Disturbance from water distribution activities would range from 1.5 to 2.0 acres per mile of distribution system. The maximum cumulative disturbance would be about 15 acres. Cut-and-fill material would be equally balanced to eliminate excess material. Disturbed areas would be revegetated immediately and, where appropriate, enclosed with barbed-wire fencing to limit public/livestock access.

9. Wetland Mitigation and Enhancement

Wetlands and associated vegetation disrupted as a result of mining-related subsidence (about 15 acres within the life-of-mine area) would be replaced as water sources were repaired, redirected, and/or developed (see Hydrologic Mitigation). While hydrologic development activities have the primary purpose of replacing water, wetland replacement would be a secondary benefit.

About 1 acre of scattered wetlands would be disrupted during construction activities along the proposed rail spur right-of-way. To mitigate this wetland loss, natural depressions along the right-of-way would be enlarged and graded to spread the water at a shallow depth across the depression.

In addition, wetland enhancement activities are proposed at certain water sources outside the life-of-mine area. These areas could eventually make up a 9-acre enhancement "bank" of wetland resources to temporarily mitigate Project-related wetland losses inside the life-of-mine area until scheduled wetland mitigation activities were complete. The "bank" of wetlands would be created on private lands in areas away from the mine site and its disruptive activities. These wetlands could serve wildlife and offer protection through topographic or vegetative features such as wind breaks or shading (see Table A-4). Selected wetland locations would be optimized for water-holding capacity and water-level maintenance. The enhancement "bank" may remain as wetland acreage after mine life even though other wetlands had been re-established.

About 2.5 acres of wetland enhancement would be initiated at 3 springs during Phase 1 mine development activities (see Table A-4 and Figure A-12). New ponds and associated wetlands would be developed in the vicinity of springs 11115 and 11125. A gravel pit located 1000 feet southwest of spring number 14785 would be enlarged and developed into a pond/wetland area. Horizontal drains would be established at spring 11115 and near spring 14785 to enhance the basic water supplies. Distribution systems would be installed to convey the excess water from spring 11115 to spring 11125 and from the horizontal drain near spring 14785 to a new pond at the gravel pit. The maximum cumulative disturbance from Phase 1 wetland enhancement would be 4 acres.

An additional 6.5 acres of wetland enhancement would be initiated at 13 other springs during Phase 2 mining activities (throughout the remainder of mine life). Enhancement activities at these springs would include enlargement of 5 existing ponds, creation of 9 new ponds, and drilling of 10 horizontal drains and 3 shallow wells (see Table A-4 and Figure A-12). Maximum cumulative disturbance from Phase 2 wetland enhancement would be 18 acres.

Cut-and-fill material associated with wetland enhancement activities would be equally balanced to eliminate excess material, as with all proposed spring development. A water delivery system would

TABLE A-4

Bull Mountains Mine No. 1
Wetland Enhancement Plan

Station	Surface Fracture Repair	Pond Repair	Pond Enlarge	Pond New	Horizontal Drain	Shallow Well	Deep Well	Guzzler	Distribution System	Comments
11115				X	X					
11125				X					X	From Spring 11115
14655			X X		X X					Develop Two Sites
14785			X		X				X	From Horizontal Drain and Spring 14785 to Enlarged Pond
17185			X			X				
17315			X							
41125			X		X					
52525				X	X					
52535				X	X					
52855				X		X				
53325				X	X					
53335				X	X					
71355				X	X					
71465				X		X				
72125				X	X					
72155				X	X					
Maximum Cumulative										
Numbers	0	0	6	11	12	3	0	0	2	
Acres	0.0	0.0	6.0	11.0	1.2	3.0	0.0	0.0	0.4	21.6 Acres

Footnote: Columns for surface fracture repair, pond repair, deep wells, and guzzlers were included on this table to maint consistency with Table A-3 even though none of these measures have been proposed for wetland enhancement.

be developed for each site, and the disturbed area immediately revegetated. Certain portions of the disturbed area would be enclosed with barbed-wire fencing to limit public/livestock access.

10. Wildlife Mitigation

a. Wildlife habitat

Reclamation activities throughout the life-of-mine area would mitigate impacts to existing wildlife habitats by creating similar habitats in form and function. Vegetation species in proposed revegetation seed mixtures include 4 native shrub species selected for their palatability, and nutritional and cover values for locally-identified wildlife species (see Revegetation Operations). Native shrub seed and tree seedlings would be planted in concentrated pockets of varying sizes and shapes for use as wildlife forage and cover, respectively.

Undulations and small hills would be designed into the regraded final topography to enhance habitat diversity. In addition, 10-foot terraces, would be used on the north face of the WDA and ponderosa pine seedlings would be used to provide visual cover during wildlife movement.

Rock piles would be placed throughout the reclaimed surface facility complex, including the WDA, at a density of about 10 to 15 rock piles per 640-acre section, depending on the availability of material. Rock piles as large as 1,000 square feet would be placed along ridges, in bottomlands, and near stock ponds to mitigate the loss of rock outcrops that are used for raptor perching and mammal dens.

Fifteen acres of wetland habitat disturbed by subsidence would be replaced. One acre of scattered wetland habitat disrupted during rail spur construction would be replaced. In addition, an enhancement "bank" of wetland resources would be created outside the life-of-mine area to temporarily mitigate up to 9 acres of anticipated Project-related wetland loss during mine life (see Wetland Mitigation and Enhancement).

b. Hydrologic structures

Water delivery systems, consisting of either freeze-proof piping and watering troughs or some other appropriate mechanism, would be installed at each horizontal drain, vertical well, guzzler, and pond development to supply drinking water to wildlife and livestock.

Shorelines associated with pond (reservoir) construction or repair would be designed to provide easy access for wildlife and revegetated to ensure adequate wildlife cover and forage.

All horizontal drain, well, guzzler, and pond developments would be fenced to prevent habitat degradation by livestock. Design overflow areas would be maintained within the enclosure fence to preserve their availability for small game.

c. Other mitigation

Appropriate Federal and State wildlife agencies would be immediately contacted should any Federal- or State-listed endangered or threatened species, or golden eagles, consistently occupy the various Project areas or immediately adjacent areas.

All powerlines constructed for mining-related operations, would be designed to minimize collisions and electrocutions of raptors, waterfowl, and other wildlife species. Powerlines would be constructed in accordance with Rural Electric Association standards designed to reduce risk of electrocution to raptors (Ollendorff 1981).

Fences throughout the life-of-mine area and along the rail spur right-of-way would be constructed with steel posts and 3-strands of barbed wire. In hazardous or critical, newly-seeded areas, a 6- or 8-foot, woven-wire fence would be used to keep out wildlife. Otherwise, barbed wire would be spaced to ensure that fences would not restrict wildlife movements and migration. Sedimentation ponds associated with the surface facility complex would not be covered or enclosed by fencing that could deter wildlife.

Rock piles, brush, and other natural barrier materials would be used to supplement fencing and to create small mammal habitat and cover while still blocking livestock access around springs, guzzlers, ponds, and well development areas when topography and materials allowed.

Speed limits on all access roads would be restricted to 25 MPH to reduce wildlife/vehicle collisions.

Employees would be informed about Montana game laws and cautioned not to harass or poach game animals.

11. Environmental Monitoring

Environmental monitoring would be conducted on a regular basis to further define premining baseline environmental conditions and to detect mining-related changes from the baseline values. Operational and postmining data would be compared with premining data collected for the permit application. These comparisons would be used to design corrective measures during mine life, as needed.

In addition to vegetation, wildlife, subsidence, and hydro-logic data collection, monitoring would be conducted for undetected cultural resources/Native American resources, airborne particulates, and soil suitability.

a. Vegetation

Monitoring would be conducted to assess the success of revegetation efforts in all disturbed areas within the life-of-mine area and the Huntley loadout. Revegetated areas would be evaluated for cover and density during the first 2 seasons following seeding or planting to determine initial revegetation success. Prior to application for bond release (in years 3, 5, 7, 9, and 10 following seeding or planting), revegetated areas would be evaluated for cover, density, production, and species diversity. If vegetation monitoring showed that corrective action was needed, then reclamation techniques and seed mixes would be revised to address the specific revegetation concerns.

b. Wildlife

Monitoring would be conducted to detect changes in wildlife concentrations or habitats during the mine life. This would include variations in species distribution or relative abundance and degradation of habitats for elk, mule deer, raptors, turkeys, and sharp-tailed grouse. Wetland and aquatic habitats would also be monitored. Monitoring activities would include field surveys, data compilation, impact assessment, and report preparation.

Field surveys would consist of aerial, vehicular, and footpath surveys. Censuses would be both visual and auditory. Seven aerial field surveys would be conducted annually; 2 in each of the fall, winter and spring seasons, and 1 during the summer. Footpath surveys in each of the 4 seasons, and vehicular and footpath surveys targeted at specific census targets and locations, would also be conducted.

The presence and distribution of breeding raptors in the area would be monitored annually. Observations of species or their sign would be recorded. Previously recorded nests would be examined for occupancy during the aerial surveys. In addition, each nest would be checked from the ground. All active nests would be monitored throughout the breeding season to determine success and production. Opportunistic observations made during aerial and ground surveys would be used to identify pairs of raptors not affiliated with a known nest in the area. If such a pair was located, the birds would be followed in an attempt to locate their nest. New nests would be monitored along with all other recorded nests.

Auditory censuses would be used each spring to assess the distribution and relative abundance of turkeys and breeding sharp-tailed grouse. The censuses would be conducted in the same manner as baseline data collection. Observation made during the aerial, vehicle, and footpath surveys would add to census results and provide incidental habitat use information. Although sharp-tailed grouse occurred in the area during the baseline data collection, only 1 lek was located. To ensure that other leks were not missed, auditory censuses would be conducted each spring. Attendance at each identified lek would be monitored annually for the duration of mining activities. This monitoring would consist of counting the number of male and female grouse attending each lek over 3 consecutive mornings.

c. Subsidence

Monitoring would be conducted to detect movements in the land surface. Monument grids would be placed over the mining panels, extending over the solid coal block, and surveyed to detect ground movements. The subsidence monitoring grid consists of 3 lines of monuments at 50-foot spacing across a portion of the first panel. Additional monuments, located at the center of other panels, would be spaced at 1,000 to 2,000 feet. All monuments would be constructed to ensure that they would not be affected by movements unrelated to subsidence, such as soil heave due to freezing.

Instrumentation for the first series of panels would include a precision level to measure vertical settlement and a steel tape extensometer to measure horizontal strain. Automatic data recording equipment would be used to take a continuous record of strain and tilt. Site-specific angle of draw, subsidence factor, and tensile strain would be calculated.

An additional monitoring system of multiple-position extensometers, or other suitable devices, would be installed to verify the mechanics of subsidence and to evaluate the caving and fracturing of the overburden. Strata movement measurements would be conducted in the life-of-mine area with 400 to 600 feet of overburden.

d. Hydrologic

Monitoring would be conducted to detect changes in 81 wells, 130 springs, 12 sites in 9 stream drainages, 57 ponds, and about 30 acres of wetlands associated with existing hydrologic features in and adjacent to the life-of-mine area. Monitoring would include both quantity and quality information. Observation frequency would vary from annual to quarterly depending on the size, use, and location of the feature (i.e., well, spring, pond) in question. Monitoring frequency could increase to a weekly basis as mining approached, then passed below, the location of the feature. When more frequent monitoring indicated that the effects of subsidence had been felt and the area stabilized once again, permission would be obtained from Montana DSL to reinstitute the original, less frequent monitoring schedule for that feature. Particular data to be collected would depend somewhat on the type of hydrologic feature being monitored. Wells would be monitored for water elevation and quality. Springs and ephemeral drainages would be monitored for flow rate and quality. Ponds would be monitored for water volume and quality and wetlands for areal extent and vegetation data.

APPENDIX B

SUMMARY DESCRIPTION OF CUMULATIVE DEVELOPMENT

A. INTRODUCTION

Several established business operations, expansion projects, and proposed activities in the study area could have cumulative effects on the human environment in combination with the proposed Project. The following paragraphs describe existing or expanding developments and new projects that may compete with the proposed Project for local employees or that may produce cumulative impacts in conjunction with the proposed Project.

1. PM Mine

The PM Mine is an underground coal mining operation consisting of 101.17 permitted acres located 16 miles southeast of Roundup, Montana in the W 1/2 of Section 13, and the NE 1/4 of Section 14, T6N, R26E MPM (see Figure B-1). RBM Mining extracts coal under a contract with Meridian Minerals Company (Meridian), which owns the mineral rights at the PM Mine. RBM Mining employs 6 workers and is currently permitted to remove 12,000 tons of coal up to the current permit boundary. Four underground mining portals have been constructed and the mine life is dependent on both market demand and the rate of advancement of the portals.

Coal from the PM Mine is extracted in a continuous-miner process, transferred to the surface by shuttle car, washed and stockpiled on site, and picked up at the mine by the purchaser. It is sold in the Roundup area and to a small Statewide market as "lump coal." Existing mine facilities include a scale; wash plant; four, 150-ton coal silos; a hopper unit; and a combined office and scale house.

Historical land uses for the PM minesite have been livestock grazing and wildlife habitat. The area was first mined in the 1930s as an underground coal mining operation, but it was converted by the owners, the Meged Family, into a surface coal mine in 1972. In the fall of 1991, the mine was converted back to underground mining when the present RBM Mining project commenced operation. Total coal production from 1973 to 1990 amounted to 228,573 tons.

2. Coal Test Pit

The Meridian coal test pit is a surface mine developed by Meridian for the purpose of extracting up to 250,000 tons of coal for marketability testing. About 101 acres were ultimately permitted by Montana DSL for test pit operations, with 36 acres constituting the total disturbed area (see Figure B-1). Approximately 160,000 tons of coal were extracted using standard open pit techniques between November 1989 and November 1990. Clean coal for shipment totaled 130,000 tons. Peak employment during this period was about 20 employees, including 5 employees in supervisory positions. The coal was trucked to the Huntley loadout for ultimate shipment to foreign markets. Reclamation of the mined area began in late-1991 and continued into 1992.

3. Huntley Loadout Facility

The Huntley loadout is a 6.07-acre rail support facility located in the NE 1/4 of the NE 1/4 Section 25, T2N, R27E in Yellowstone County, Montana, on the east edge of Huntley (see Figure B-2). The loadout's surface area consists partly of gravel and partly native range. Washington Corporations,

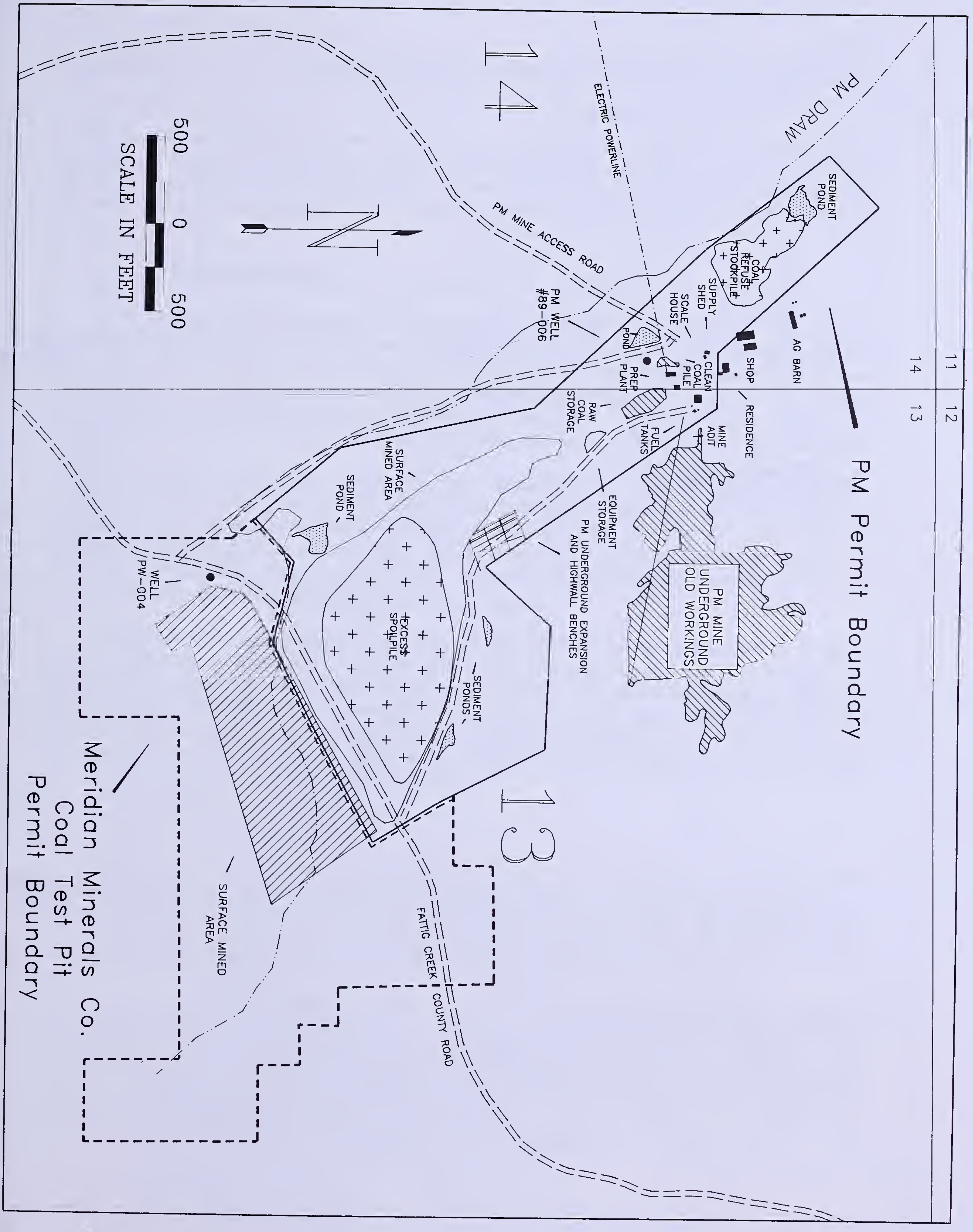

14
13
11
12
14
13
PM DRAW
ELECTRIC POWERLINE
PM MINE ACCESS ROAD
SEDIMENT POND
COAL REFUSE STOCKPILE
SUPPLY SHED
SCALE HOUSE
AG BARN
SHOP
CLEAN COAL PILE
PREP PLANT
PM WELL #89-006
RESIDENCE
MINE ADIT
FUEL TANKS
RAW COAL STORAGE
EQUIPMENT STORAGE
PM UNDERGROUND EXPANSION AND HIGHWALL BENCHES
PM MINE UNDERGROUND OLD WORKINGS
PM Permit Boundary
SURFACE MINED AREA
SEDIMENT POND
EXCESS SPOILPILE
SEDIMENT PONDS
WELL PW-004
Meridian Minerals Co. Coal Test Pit Permit Boundary
SURFACE MINED AREA
FATTIG CREEK COUNTY ROAD
N
500 0 500
SCALE IN FEET

Figure B-1 Existing buildings and facilities at the PM Coal Mine and coal test pit

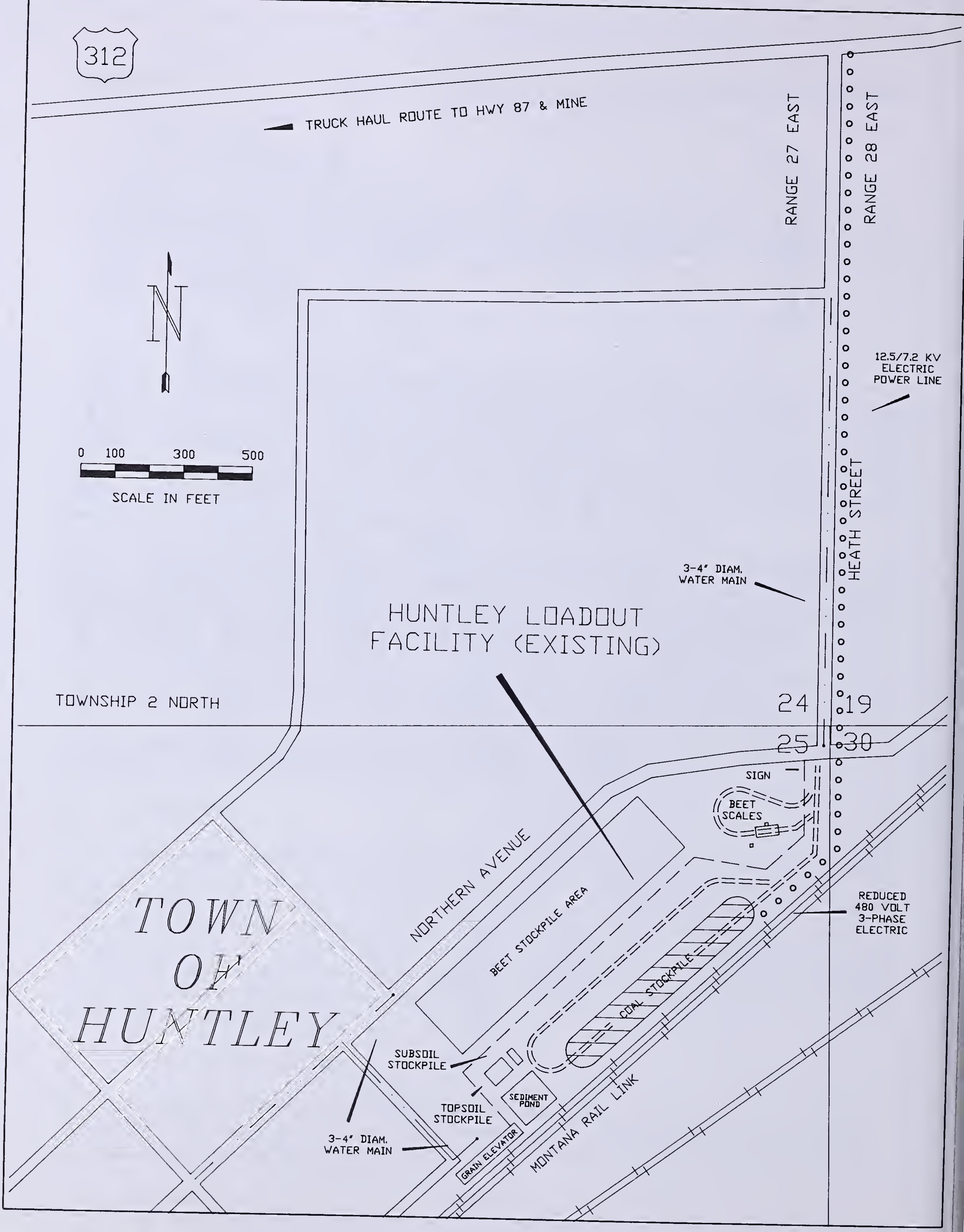

312
TRUCK HAUL ROUTE TO HWY 87 & MINE
RANGE 27 EAST
RANGE 28 EAST
N
0 100 300 500
SCALE IN FEET
12.5/7.2 KV ELECTRIC POWER LINE
HEATH STREET
3-4" DIAM. WATER MAIN
HUNTLEY LOADOUT FACILITY (EXISTING)
TOWNSHIP 2 NORTH
24
19
25
30
SIGN
BEET SCALES
NORTHERN AVENUE
BEET STOCKPILE AREA
COAL STOCKPILE
REDUCED 480 VOLT 3-PHASE ELECTRIC
TOWN OF HUNTLEY
SUBSOIL STOCKPILE
SEDIMENT POND
TOPSOIL STOCKPILE
GRAIN ELEVATOR
MONTANA RAIL LINK
3-4" DIAM. WATER MAIN

Figure B-2 Existing Huntley loadout, beet-loading facility, and grain elevator through its railroad subsidiary, Montana Rail Link, owns the facility. The site has electrical service. Water for dust control is available from a well completed by Meridian in 1990. In recent years, horses have been grazed on the land for short periods of time. The southwest portion was established as a temporary coal loadout by Meridian, in its 2-year test pit permit, from November 1989 to November 1991.

4. Sugar Beet Loading Site

The Huntley sugar beet loading and stockpiling site is located directly west and adjacent to the existing coal loadout facility in Huntley (see Figure B-2). The property is owned by Montana Rail Link and leased to Western Sugar Company (WSC). WSC uses the site to temporarily stockpile beets before they are hauled to a processing factory in Billings. Sugar beets received from local farmers are stockpiled during the peak harvest month of October and subsequently hauled to a factory in Billings from October through January. Total WSC employment at the stockpile usually averages between 4 and 6 workers.

Since 1985, sugar beet truck traffic from local farmers hauling to the stockpile has varied from 830 loads in 1985 to 4,252 loads in 1990. Most field harvest traffic has occurred in October, usually 10 to 12 hours per day, 6 days per week. In 1990, the average truck traffic from farms to the stockpile was 177 trips per day over a 24-day period. Peak hauling during 1990 occurred on October 13 and involved 281 trips from area farms. Most farm truck traffic arrives at the stockpile using Northern Avenue from the west and east, and Heath Street from the north.

Beets are subsequently re-hauled from the loading site to the factory in Billings. This activity fluctuates annually, but from 1988 through 1990 the average was about 35 loads per day for 26 days per year. Hauling usually occurs daily, throughout a 24-hour period, with intermittent breaks as dictated by factory needs. Peak hauling in 1990 was 69 loads on October 21, with 60 or more loads occurring on 3 other days. Beet hauling is usually contracted with a local trucking firm. Trucks normally haul to the factory in Billings by turning west from the loadout facility site onto Northern Avenue, and by taking Interstates 94 and 90 to the exit ramp at 27th Street.

5. Fergus Electric Cooperative

As a power distribution cooperative, Fergus Electric does not own any power generation facilities. Its subtransmission and distribution system is served by 19 substations. Fergus Electric Cooperative was incorporated in 1938 under the authority of the Rural Electrification Act of 1935. Fergus Electric serves a 13-county geographical area centered around Lewistown, and supplies power to about 2,700 customers over about 4,000 miles of subtransmission and distribution lines (see Figure B-3).

System power is purchased through the Central Montana Electric Power Cooperative, an electric power broker that purchases wholesale power from Montana Power Company and Western Area Power Administration. The cooperative's customer base is primarily rural residential and irrigators. Large commercial customers include the Kendall Mine, BER Oil, and PM Mine. Annual Power sales average 70 to 80 million kilowatt hours. Fergus Electric employs a total of 24 people; 21 in Lewistown and a maintenance crew of 3 in Roundup.

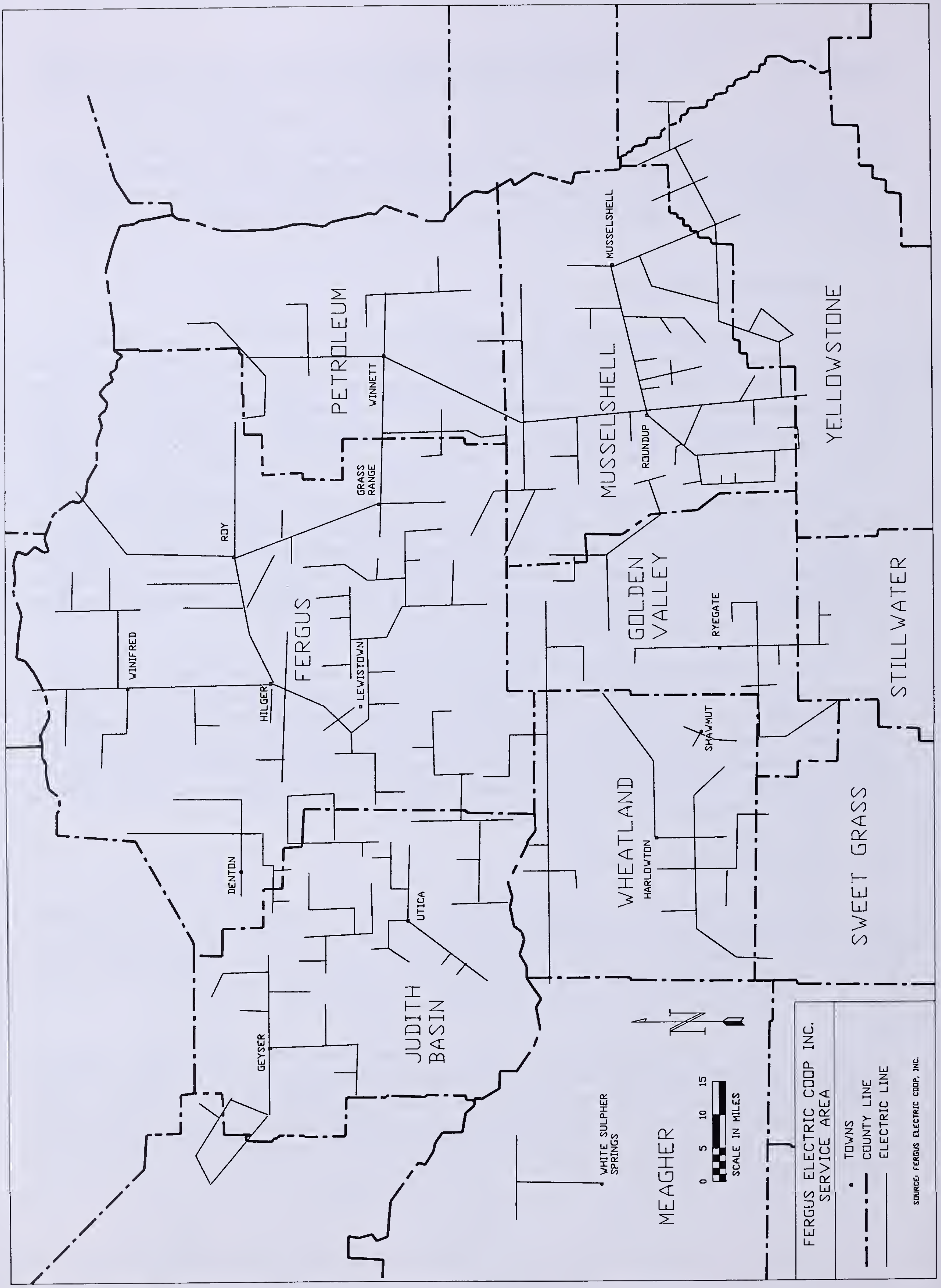

FERGUS ELECTRIC COOP INC.
SERVICE AREA
TOWNS
COUNTY LINE
ELECTRIC LINE
SOURCE: FERGUS ELECTRIC COOP, INC.
0
5
10
15
SCALE IN MILES
N
PETROLEUM
WINNETT
GRASS RANGE
ROY
FERGUS
WINIFRED
HILGER
LEWISTOWN
DENTON
UTICA
JUDITH BASIN
GEYSER
MUSSELSHELL
MUSSELSHELL
ROUNDUP
YELLOWSTONE
GOLDEN VALLEY
RYEGATE
STILLWATER
WHEATLAND
HARLOWTON
SHAWMUT
SWEET GRASS
MEAGHER
WHITE SULPHER SPRINGS

Figure B-3 Fergus Electric Cooperative power distribution system

6. Women's Correctional Facility

The State of Montana proposes to construct a new Women's Correctional Facility in the Billings area near 32nd Street West and Hesper. The present facility for women prisoners is located in Warm Springs and would be closed upon completion of the new prison. Construction of the proposed $10 million facility should begin in January 1993 and last for about 18 months. Construction employment would total 50-100, and operation of the 120-bed facility eventually would employ 80 to 90 people on a permanent basis.

7. Cenex Hydrosulphurization Project

Cenex operates a fuel refinery in Laurel, Montana, that produces asphalt, diesel fuel oil, gasoline, and liquified petroleum products. The refinery has been in operation since 1930, with a capacity of 42,000 barrels per day, and is expected to continue operations for at least 44 years. In May of 1992, Cenex began construction on a hydrosulphurization project that is also located at the refinery in Laurel. The hydrosulphurization project, which is expected to become operational toward the end of 1993, is strictly a mitigation project to reduce air emissions and is not expected to expand the number or value of products produced. The construction phase is expected to employ about 400 workers who are being hired from the local area.

8. Cogeneration Project

Billings Generation, Inc. is in the permitting process to construct a proposed $150 million cogeneration project east of Billings. The cogeneration plant would use refinery coke and return steam to the Exxon refinery to be used in production. The project is also expected to reduce sulphur dioxide emissions from the Exxon refinery. If permitting continues as planned, construction of the project would begin in fall 1992 and operations would commence in 1994. The construction phase of the project would employ 400 to 500 workers hired from the local work area. When complete, the project's permanent employment requirements would be 30 direct workers and 15 secondary workers.

If permitting continues as planned, construction of the project would begin in spring 1992 and operations would commence in 1994. A construction contractor based in California has been selected; however, it is expected to subcontract for employees in the local work area. The project would employ 400 to 500 construction workers, primarily pipefitters. When complete, it would increase employment by 30 direct workers and 15 secondary workers (Owen Orndorff, Billings Generation, Inc., November 7, 1991).

9. U.S. Highway 87 Improvements

The State of Montana has two reconstruction projects planned for U.S. Highway 87 between Roundup and Billings. Reconstruction of 6.2 miles of U.S. Highway 87 is scheduled to begin after 1993 between milepost 23 and milepost 29.2, several miles south of the south entrance to Old Divide Road. The construction period should last about a year and would employ between 50 and 100 workers. Truck traffic from reconstruction may periodically total 20 trucks per hour. The trucks would be similar in size to coal haul trucks.

The other reconstruction project planned for U.S. Highway 87 is north of the proposed coal haul route from Klein to the junction of Highway 12. This project includes 1.8 miles of U.S. Highway 87 and 1.1 miles of Highway 12 (from the junction with U.S. Highway 87 to Roundup). Depending on the contractor, truck hauling related to this project may use U.S. Highway 87 south of the reconstruction project.

10. Sealey's Sawmill

Sealey's Sawmill is located east of Roundup on Highway 12 and is owned and operated by Lawrence Sealey. The sawmill, in operation since 1948, currently produces rough lumber and timber, dimension lumber, and firewood. Employment usually averages 8 people, but the firm also hires contractors as needed. At the present time, the sawmill obtains logs from the Lewistown area.

11. Gebhardt's Post Plant and Sawmill

Gebhardt's Post Plant and Sawmill is located west of Roundup and is owned and operated by Monte Gebhardt. The mill, in operation since 1985, produces timbers, posts and poles, rough and surfaced timber, and treated wood products. Due to recent layoffs at the sawmill operation, employment has been reduced to 2 workers. The mill currently obtains logs from the Lewistown and Musselshell areas.

12. Burlington Northern Railroad

Burlington Northern (BN) owns tracks that are located near Broadview and connect Great Falls to the Montana Rail Link tracks at Mossmain, several miles east of Laurel, Montana (see Figure B-4). BN employs approximately 125 workers in the Billings area. The largest operation is the rail welding plant in Laurel, employing about 100 workers. The Great Falls/Mossmain tracks were built in the early-1900s and are currently used by 2 to 4 trains per day between Shelby and Mossmain.

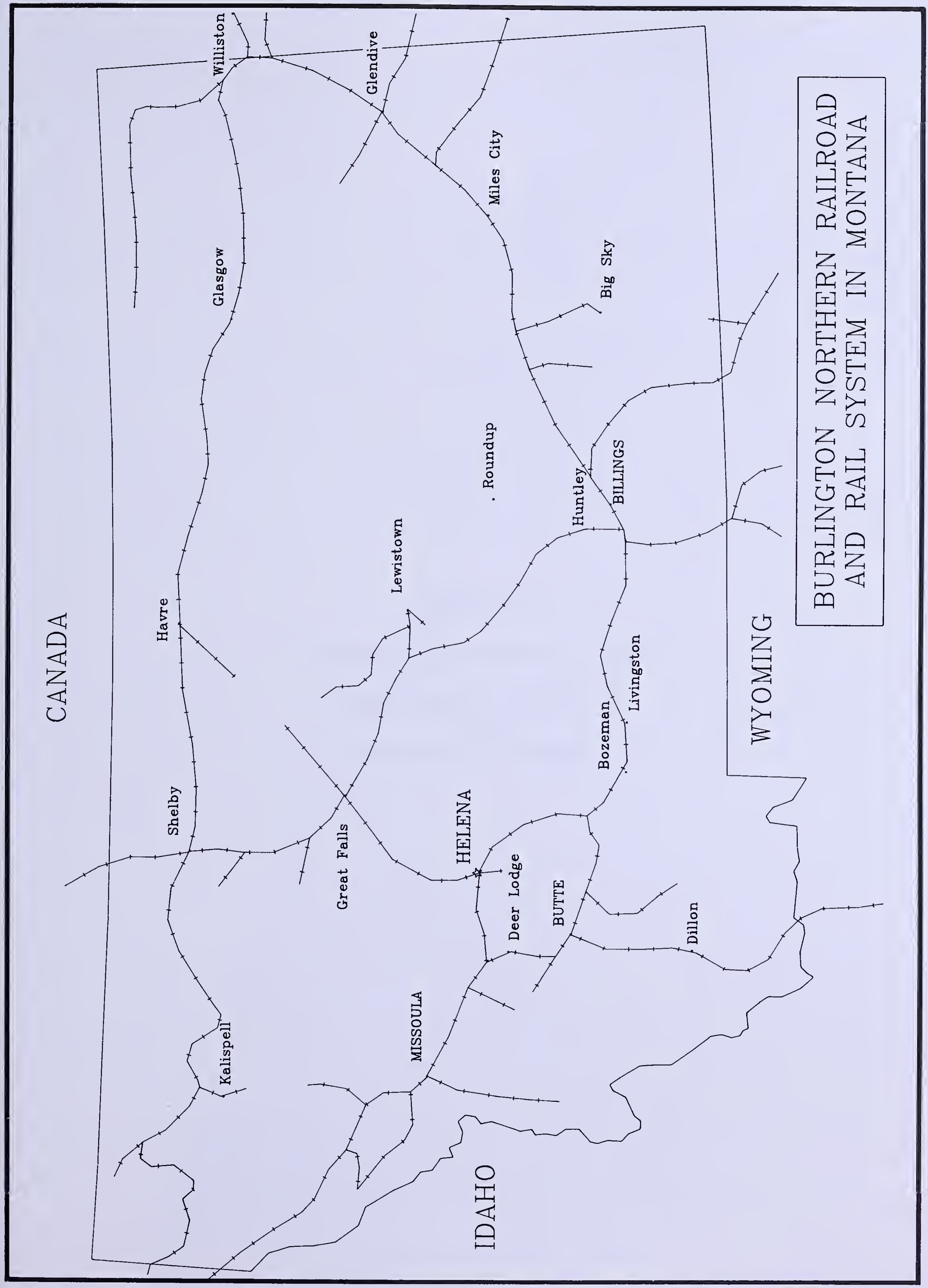

BURLINGTON NORTHERN RAILROAD AND RAIL SYSTEM IN MONTANA
CANADA
WYOMING
IDAHO
Williston
Glendive
Miles City
Big Sky
Glasgow
Roundup
Huntley
BILLINGS
Lewistown
Havre
Livingston
Bozeman
Shelby
Great Falls
HELENA
Deer Lodge
BUTTE
Dillon
MISSOULA
Kalispell

Figure B-4 Burlington Northern Railroad and rail system in Montana

APPENDIX C

UNDERGROUND MINING OF COAL

Mining Methods and Equipment
and
Mechanisms of Subsidence

1. INTRODUCTION

Coal mining involves the extraction of coal deposits. Although the thickness of a coal bed may vary, mined deposits generally are continuous over large areas. When the deposit is close to the ground surface (less than 200 feet deep) generally it is mined using open-pit, surface methods. Deeper deposits must be mined by underground methods.

Rocks above and below the coal deposit are known as overburden and underburden. Rocks of the overburden and underburden that are actually in contact with coal are called the "roof" and "floor", respectively. Blocks of coal left in place to help support the roof of the mine are called "pillars".

Removal of coal by underground methods creates a void in the rock column. As a block of coal is extracted, natural forces act on the stability of the overburden and cause the column to subside. Even in the strongest rock formations, large, artificial underground openings will eventually be filled by the collapse and compaction of overburden and pillars. Underground mining methods are generally classified or distinguished from each other by the type of support used to prevent the roof from collapsing prematurely on workers and equipment.

2. ROOM-AND-PILLAR MINING OPERATIONS

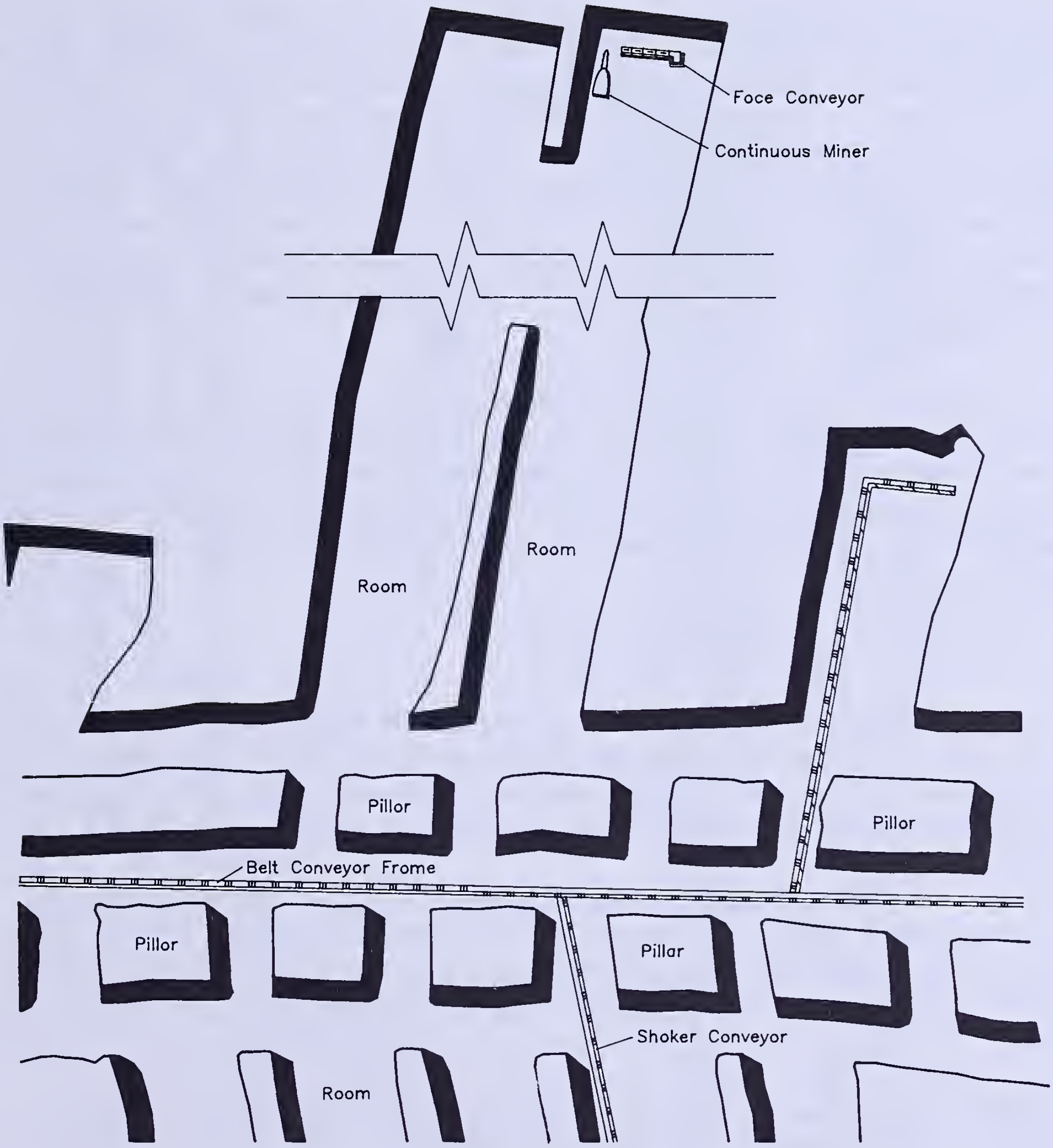
Room-and-pillar mining is generally defined as "a system of mining in which part of the coal is mined out and the rest is left in place as pillars for support" (Stout 1980). It involves the partial removal of coal from a series of small areas or "rooms" that are large enough to make the removal of coal economical, yet small enough to leave remaining walls and pillars that are of adequate size to support the roof and ensure the safety of both workers and their mining equipment (Figure C-1).

Room-and-pillar operations are generally conducted with a continuous-miner system, which includes:

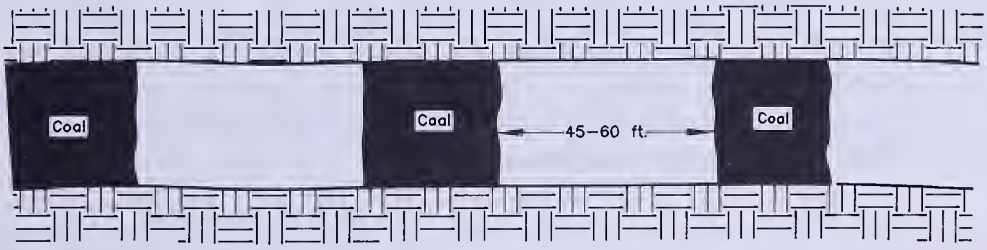
- a coal extraction machine (continuous miner)
- a coal haulage system (shuttle cars and conveyor belts)
- a roof support system (roof bolts and pillars).

The continuous miner is electro-hydraulically powered and cat-track propelled. Major components of this machine include a rotating-cutting drum, a gathering head, and a conveyor. Operation of the machine at the working face of the coal involves driving the rotating-cutting drum at the front (head) of the machine into the coal bed, thereby cutting coal from the coal face. The gathering head shifts the cut coal to the conveyor for transfer to the rear (tail) of the machine. An articulating conveyor then transfers the coal to shuttle cars.

Shuttle cars are used to transport mined coal (10 to 15 tons per car) from the continuous miner to a conveyor belt transfer point within the mine. The cars are either electric or diesel powered, 2- or 4-wheel drive, and have either a conveyor or push-ram system to discharge the coal. Additional conveyor belts transport coal to a run-of-mine (ROM) coal stockpile outside the mine portal.


Foce Conveyor
Continuous Miner
Room
Room
Pillor
Pillor
Belt Conveyor Frome
Pillor
Pillar
Shoker Conveyor
Room

Plan View


Coal
Coal
45–60 ft.
Coal

Cross Section

Figure C-1 Conceptual room-and-pillar mining

Pillars and roof bolts are used to support the roof. Solid pillars of coal are left in place during the initial (advance) mining stage to provide basic roof support within each block of mined-out coal and along the main access corridors (entries) of the mine. Additional roof support is provided by the use of roof bolts. Roof bolts are long steel rods, drilled into place and then anchored to the roof rock by either a resin glue or a mechanical compression device. They create a supporting "beam" of rock by bonding or "bolting" several layers of rock strata together. The general mining/ production sequence allows for the continuous miner to advance about 20 feet before the roof of the mined area is secured with roof bolts. Several continuous-miner sections (entries) are usually developed concurrently to allow for uninterrupted mining activity (i.e., while roof bolts are being installed in some entries, mining can continue in other entries).

As a general rule, 30 to 60 percent of the coal remains in place in the form of pillars after the rooms are mined. To increase coal recovery, the roof can be temporarily reinforced with additional bolts so that those pillars not required for support of the main entries can be systematically removed. In this second stage of mining, pillars are removed (or "robbed") as the mining equipment "retreats" from each mined room. As pillar-robbing progresses, each mined-out block of rooms is allowed to cave in and the mined area is abandoned.

3. LONGWALL MINING OPERATIONS

Longwall mining is generally defined as "a system of mining whereby most of the coal is mined and the roof over the worked out area is allowed to cave" (Stout 1980). It involves a complete, single-stage extraction of coal that uses hydraulic equipment to temporarily support the roof during coal removal activities and ensure the safety of both workers and their mining equipment (Figure C-2).

Longwall operations begin with continuous-miner equipment and room-and-pillar techniques to create a set of parallel entries on either side of a large block (or "panel") of coal. These entries are connected at the far end of the panel, resulting in a long corridor, thus the "longwall". The distance between the entries is equal to the length of the longwall equipment that will be used (ranging from 520 to 840 feet).

Longwall operations are generally conducted with a longwall mining system. As with the continuous miner, the longwall system would include:

- a coal extraction machine (shearer)
- a coal haulage system (face conveyor)
- a roof support system (shields)

While the continuous-mining system employs several independently-operated pieces of equipment to mine coal, the longwall mining system is totally integrated, with all of the necessary equipment interconnected. For example, in the longwall mining system, the shearer actually moves along the face conveyor and the shields are physically connected to it.

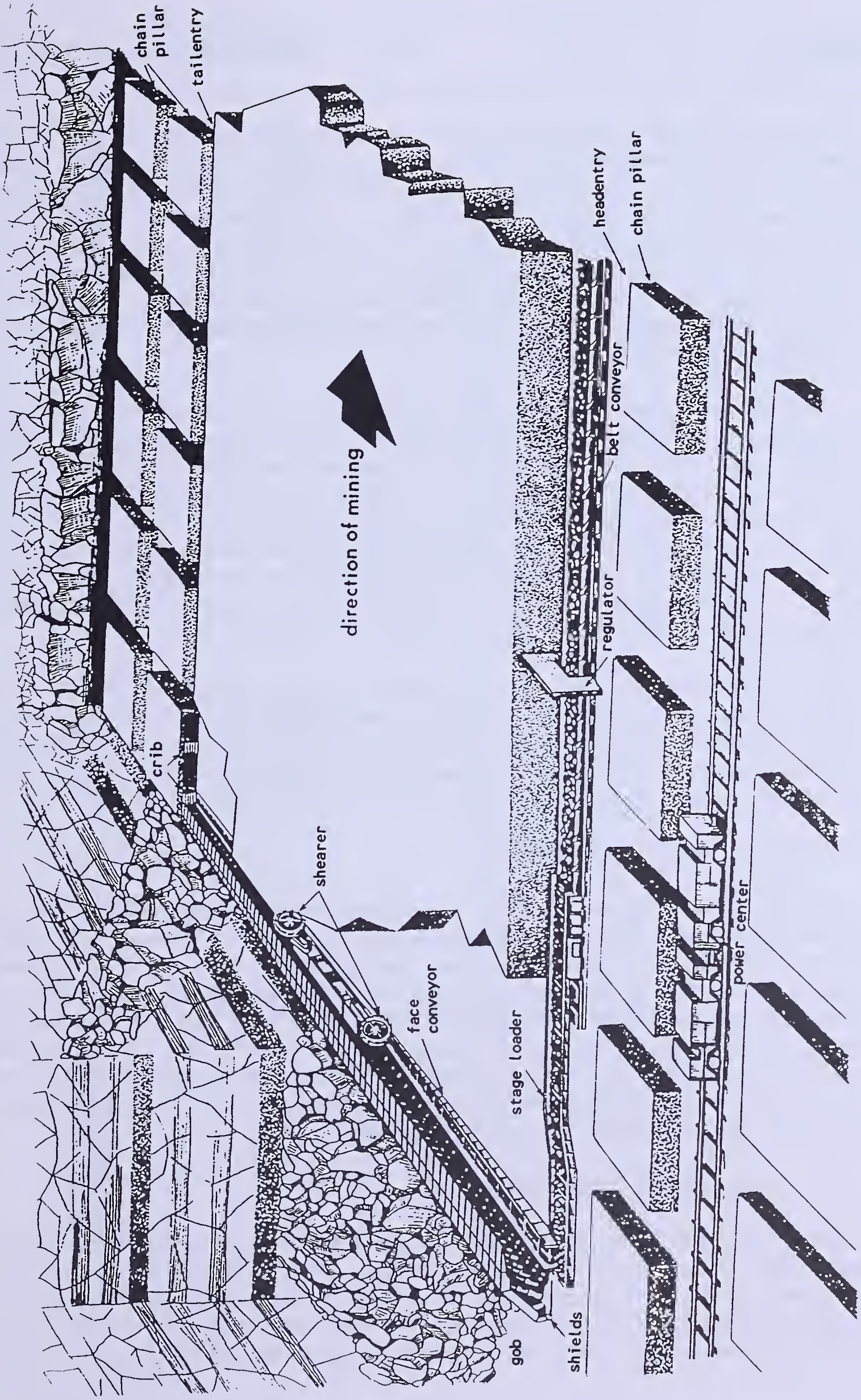

chain pillar
tailentry
headentry
chain pillar
belt conveyor
direction of mining
regulator
crib
shearer
face conveyor
stage loader
power center
gob
shields

Figure C-2 Conceptual longwall mining

The shearer, like the continuous miner, is electro-hydraulically powered. The major components of this machine are the rotating-cutting drums and the tram system. The drums, located at each side of the machine, are limited to an up-down movement. Operation of the shearer at the working face involves driving the rotating-cutting drums into the coal bed as the machine trams laterally along the face conveyor, thereby cutting coal from the coal face. Cut-coal falls to the floor-supported face conveyor for transport to the end of the longwall or "headgate". Here the coal is transferred to another conveyor belt. The end of the conveyor opposite the headgate is known as the "tailgate." As in the continuous-miner system, additional conveyor belts transport the coal from the belt-conveyor transfer point to a ROM coal stockpile outside the mine portal.

Longwall roof support is temporarily provided by the use of hydraulic roof supports (shields). Major components of the shields include canopy, hydraulic cylinder, hydraulic controls, and the base. The canopy is a thick, reinforced, steel plate which is pushed against the roof by hydraulic cylinders to support the weight of the overburden while coal removal operations continue below. Shields are generally 5-feet wide, vary from 7- to 14-feet high, and have a design-load capacity of 500 tons or more per shield. The base length of the shield is relatively short, allowing the face conveyer to sit on the floor ahead of the base. Shields are designed to be large enough to safely cover the face conveyor, shearer, and workers. In the longwall system, a series of individual shields are installed next to one another along the entire longwall face, from the face conveyor headgate to its tailgate.

The mining/production sequence involves cutting (shearing) a section of coal face, typically 30 to 42 inches deep, from the headgate to the tailgate, using hydraulic rams to move the face conveyor up against the face of the fresh-cut coal seam. Hydraulic rams attached to the face conveyor then move individual shields forward. The unsupported roof behind the shields is allowed to fall to the floor. As the block of coal is systematically removed, mined area is gradually abandoned.

4. MECHANISMS OF SUBSIDENCE

Removal of coal deposits by underground mining methods creates voids that are filled when natural forces overcome the stability of the overburden and it collapses. The collapse of overburden into the void, and translation of this movement to the surface are known as subsidence. Subsidence-related deformation of rocks above underground mines can consist of fragmentation, fracturing, sagging, and bedding-plane separation. The type of deformation that occurs depends on a number of factors including rock strength, mine layout, and how far a particular horizon lies above the void in the mined area. Subsidence-related deformation of the surface can consist of basins or depressions, pits, and/or cracks. The magnitude, extent, and duration of subsidence can be minimized by an efficient mine layout, barrier and pillar design, and a rapid and efficient mining system.

a. Subsidence-Related Deformation

In the overburden above mined areas, 3 zones of deformation tend to develop in response to subsidence (Figure C-3). In the "Fragmented Zone", rocks of the immediate roof are expected to fragment, cave, and rotate. This zone can be as much as 10 times thicker than the void produced by mining (the mining height). Directly above, in the "Fractured Zone", rocks are expected to fracture and deform but they should maintain their continuity. Bedding plane separations can occur. This zone can

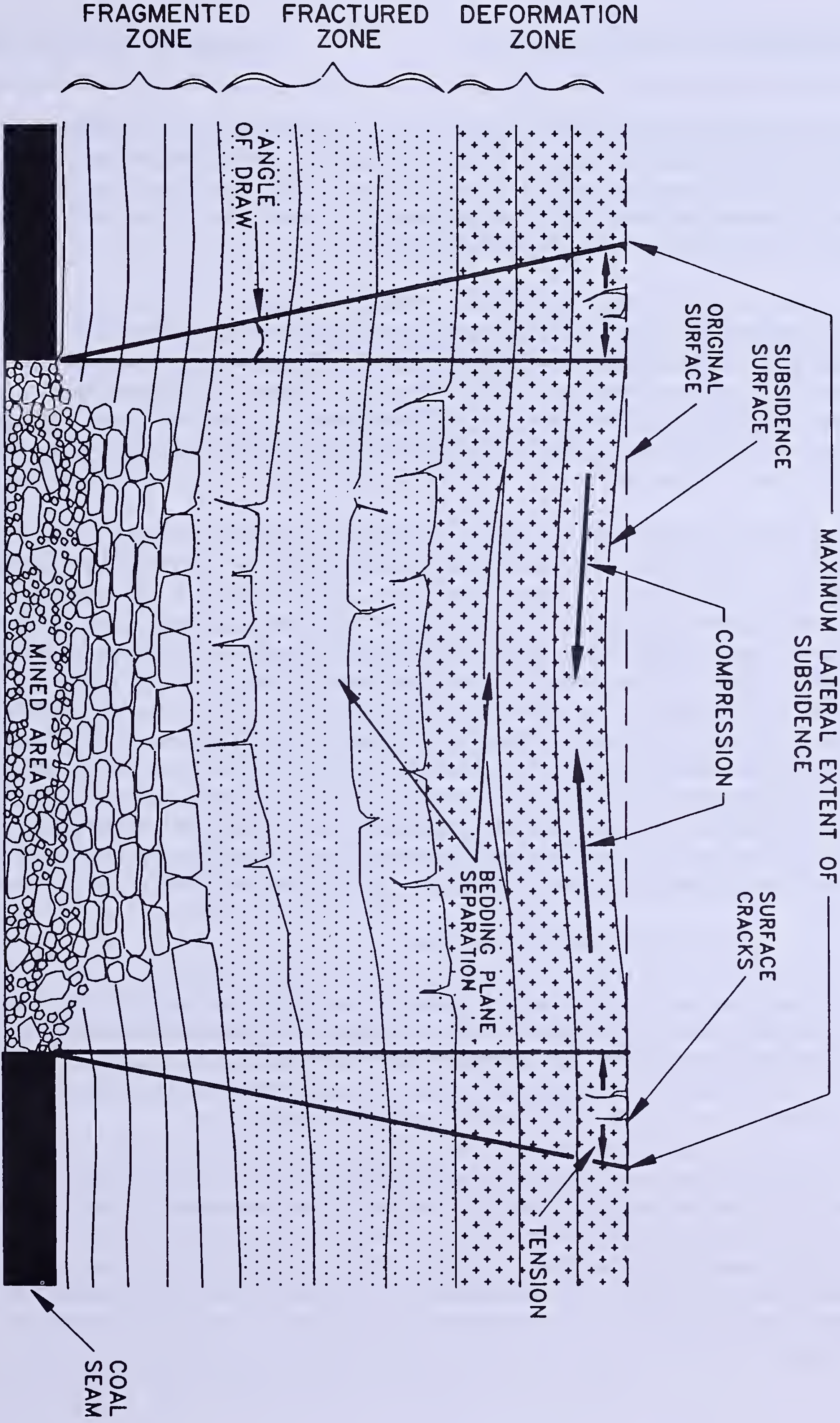

FRAGMENTED ZONE
FRACTURED ZONE
DEFORMATION ZONE
ANGLE OF DRAW
MAXIMUM LATERAL EXTENT OF SUBSIDENCE
SUBSIDENCE SURFACE
ORIGINAL SURFACE
COMPRESSION
SURFACE CRACKS
BEDDING PLANE SEPARATION
MINED AREA
TENSION
COAL SEAM

Figure C-3 Conceptual representation of subsidence deformation zones be as much as 50 times thicker than mining height. In the third zone, the "Deformation Zone", rocks should sag downward without major fracturing but bedding-plane separations can still occur. This zone generally extends from the top of the fractured zone to the ground surface. After the deformation process, fractures that developed in softer sandstones and shales tend to close, while fractures that developed in more brittle rocks may remain open.

The surface expression of subsidence basically consists of basins or depressions, pits, and/or cracks. Subsidence "basins" form above room-and-pillar mines where pillars have been robbed or above longwall mines. These basins are typically elliptical or trough shaped because the rooms or panels are large and rectangular and coal seams often are nearly horizontal. Subsidence "pits" form above room-and-pillar mines where pillars have been retained because the overburden directly above the pillars continues to be supported, while the overburden above the mined area eventually collapses into the relatively smaller, mined-out rooms.

Horizontal strain, both tensile and compressive, results from lowering of the surface during subsidence. Tension that can cause cracks occurs as the surface begins to subside and stretch. Compression takes over and closes some of the tension cracks as the ground begins to settle. Corresponding changes in surface slope generally are temporary and often have a magnitude of less than 3 degrees. Tension cracks are more apparent than compression features because rocks are stronger in compression (Dunrud 1984). They are more abundant in solid rock than they are in unconsolidated materials. Tension cracks at the surface can range from small, (less than an inch) subtle features that are difficult to recognize to fractures several feet wide and up to 50 feet deep. Surface fractures may be temporary, often closing during successive subsidence events or after natural deposition of sediment or frost heaving fills them. Tension cracks over the edges of the mined area (the mining boundaries), may remain open indefinitely. This is most evident in those areas where brittle sandstones or other rocks crop out. The surface soil cover will have an influence on the cracking that is actually visible at the surface. Unconsolidated deposits of alluvium, colluvium, and soil tend to obscure surface cracks.

b. Factors Controlling Subsidence

Several factors control the area, amount, rate, and duration of subsidence. Mining factors include mine geometry, extraction ratio, mining method, height of the mine workings, and mining rate. Geologic factors include thickness of the coal deposit, and the thickness, lithology, strength, structure, and bulking factor of the overburden. The subsidence factor and the angle of draw are used to describe the maximum vertical displacement and the areal extent of subsidence, respectively.

The "mine geometry", or mine design, determines the size and configuration of the rooms, pillars, and panels, the height of the openings and pillars, and the spatial relation to any abandoned mines that may be located above the active mine. Generally mines are designed so that the subsidence process can take advantage of joints in the overburden. This can minimize sagging of the immediate roof and promote rapid roof collapse. Although subsidence can be reduced by leaving pillars for support, this procedure may only delay subsidence because pillars and roof rocks eventually yield with time and weathering.

The "extraction ratio" is the ratio of the amount of coal extracted to the total amount of coal in the deposit (Dunrud 1984). Longwall mining, because it extracts nearly 100 percent of the coal within a longwall panel, generally achieves an overall extraction ratio in excess of 80 percent of the total coal deposit. Room-and-pillar mining rarely extracts more than 55 percent of the total resource, but pillar robbing upon retreat from a mine has the potential to extract nearly as much of the coal as longwall mining.

The "mining method" also influences the amount of subsidence that occurs. Longwall mining results in more subsidence than room-and-pillar mining principally because of its greater extraction of coal. Efficient robbing of pillars, however, can result in surface subsidence nearly equal in magnitude to that associated with longwall mining. Subsidence above room-and-pillar mining areas is also less predictable and more variable in surface expression than above longwall panels because the extraction ratios and heights of caving are more variable (Dunrud 1984).

The "mining rate" affects subsidence too. When the mine face is extracted at an even and rapid rate, smoother subsidence profiles with less differential movement occur.

Thickness of the coal deposit, thickness of the overburden, and height of the mine workings control maximum subsidence. The "subsidence factor" is the ratio of maximum surface subsidence to the seam mining height and is often expressed as a percentage. For example, if 7 feet of subsidence occurred over a mine with a 10-foot mining height, then the subsidence factor would be 70 percent. In the western United States, subsidence factors range from about 45 to 90 percent of the thickness of coal mined (Dunrud 1984). The "angle of draw" identifies the limits of subsidence beyond the boundaries of the mined area (the subsidence occurring at the ground surface will be larger than the underground void). It is expressed in degrees from vertical above the edge of the mined area. For example, if the angle of draw were 27 degrees and the overburden were 400 feet thick, then subsidence could occur as much as 200 feet beyond the edge of the mined area. In the western United States subsidence angles of draw range from about 5 to 30 degrees (Dunrud 1984).

Sagging, caving, and fragmentation are governed by the "strength" and "structure" of the overburden. The composition of the mineral grains and cements that bind the grains together affect the strength of the rocks. Existing faults and fractures in the overburden offer good sliding surfaces that can influence the angle of draw. The strength and structure of the overburden rocks are considered when determining room, pillar, and panel orientation.

The "bulking factor", or the volumetric increase of fragmented rocks relative to their undisturbed and in-place volume, is a major factor controlling subsidence. The bulking factor is controlled by the size and shape of the broken rocks, the contact stresses among rock fragments within the fragmented zone, and the relative strengths of the affected rocks (Dunrud 1984). Bulking factors generally are lowest where the overburden is composed of soft claystones and thinly bedded shales, and greatest where hard, thickly bedded to massive sandstones and limestones predominate. If rock fragments fall to the floor of the mined area in a random fashion, and if strong, massive rocks occur in the fractured and deformation zones, then the bulking factor is higher. Higher bulking factors in the overburden result in less vertical movement of the rocks and reduced tension and compression at the surface.

c. Prediction of Subsidence

Subsidence associated with underground mining is anticipated and its magnitude and extent can be predicted. Often, predictions of maximum surface subsidence and horizontal tensile and compressive strains are used to help assess the secondary impacts to other resources (both human and natural). Data collected during actual subsidence are used to verify premining predictions.

A method of calculation developed by the British National Coal Board (Subsidence Engineers' Handbook 1975) offers one of the most comprehensive, conservative, and accurate techniques for predicting subsidence and surface strains. Other researchers have modified it for the stronger strata of coal mines in the western United States (Maleki 1987; Western Fuels Association, Inc. 1981). Inputs to the subsidence prediction model are depth, mining height (seam thickness), and room or panel geometry.

"Subsidence profiles" can be used to illustrate subsidence and strain predictions above a mined area. Diagrams A, B, and C of Figure C-4 show a cross section of a longwall mine and the subsidence and strain profile that might be expected to develop over 2 mined-out longwall panels. In this example, the longwall panels are 800 feet wide, overburden is about 780 feet thick, mining height is 13.5 feet, the subsidence factor is 70 percent, and angle of draw is 22.5 degrees. Under these conditions the maximum final surface subsidence would be 9.8 feet, which would occur over the middle of each panel. Final subsidence over the pillars between 2 panels, while not reaching the maximum, would still be about 5 feet. In diagram B, the dashed line indicates the limit of subsidence resulting from a single panel and the upper solid line represents the extent of subsidence (about 2.5 feet) immediately after mining the adjacent panel. The lower solid line represents the maximum final subsidence over the pillars after they have collapsed under the weight of the overburden. Diagram C shows the compressional strain that occurs above the panels and the tensile strain that occurs at panel boundaries and over pillars as the rocks flex and stretch downward into the subsidence trough. In this example, the tensile strain exceeds the strain criterion recommended by Singh and Bhattacharya (1984) in those areas above the panel boundaries and the pillars; surface cracking would be predicted in these areas, with larger maximum tensile strains possibly resulting in wider cracks. The exact location and actual width of open surface cracks is unpredictable.

A monitoring program is generally implemented at underground mines to collect subsidence data. These data are used to verify the accuracy of the predicted subsidence under actual ground conditions and to detect mining-induced impacts to surface resources, both predicted and unpredicted. In addition, site specific angle of draw, subsidence factor, and tensile strains may be calculated. These results can be used to refine the predictive model, which then can be used to estimate the effects of mining in successive longwall panels during the remainder of the mine life.

A number of techniques and types of equipment can be used in subsidence monitoring programs. These include: conventional ground surveying of monuments located over panels and extending out over unmined areas; installation of extensometers to measure horizontal strain; aerial photographic surveying; analytical aerial triangulation; digital terrain modeling; surface observations; and well, surface water, and spring monitoring. Monuments, to be effective, must be constructed so as to be unaffected by movements unrelated to subsidence, such as soil heave due to freezing.

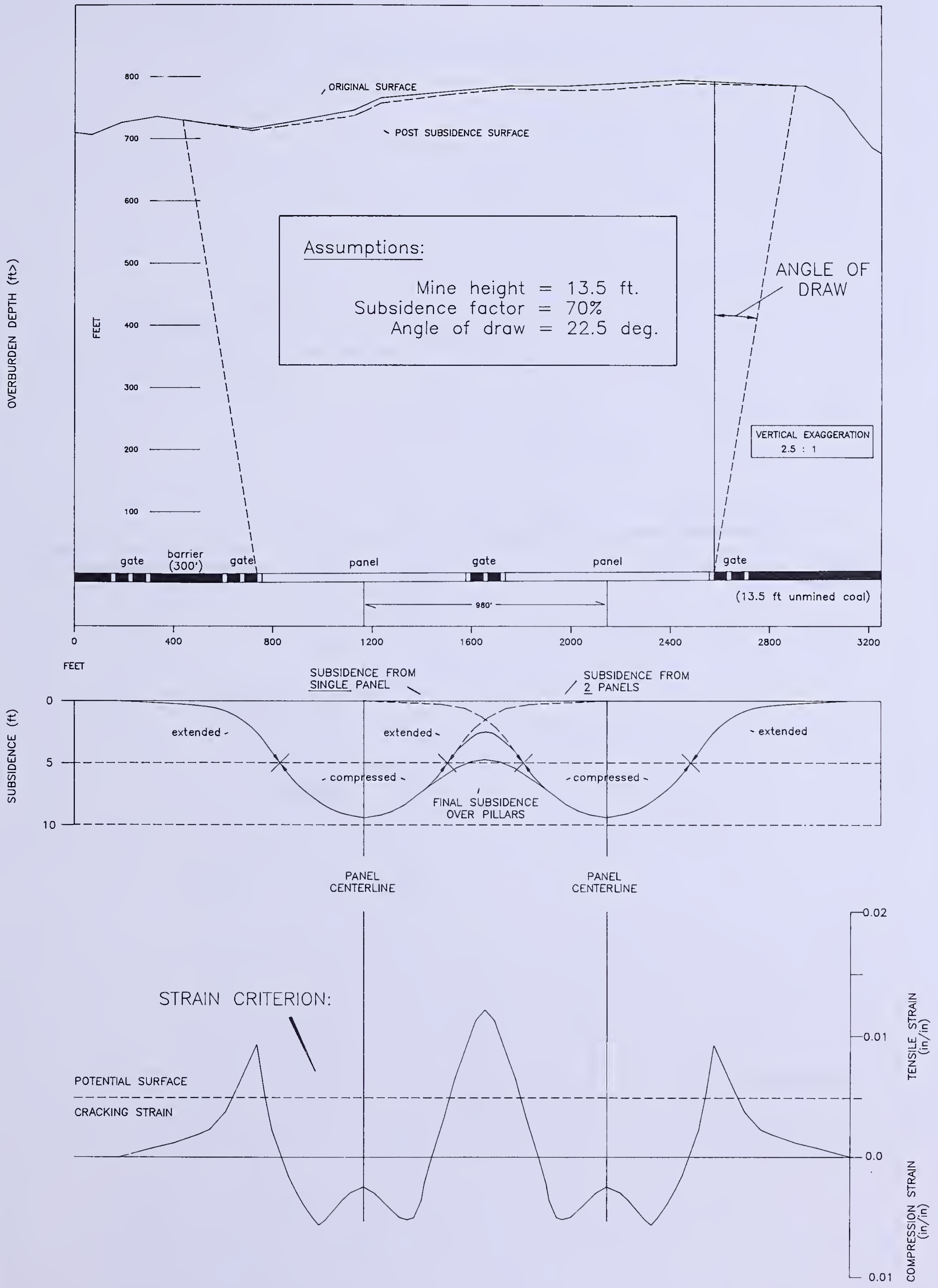
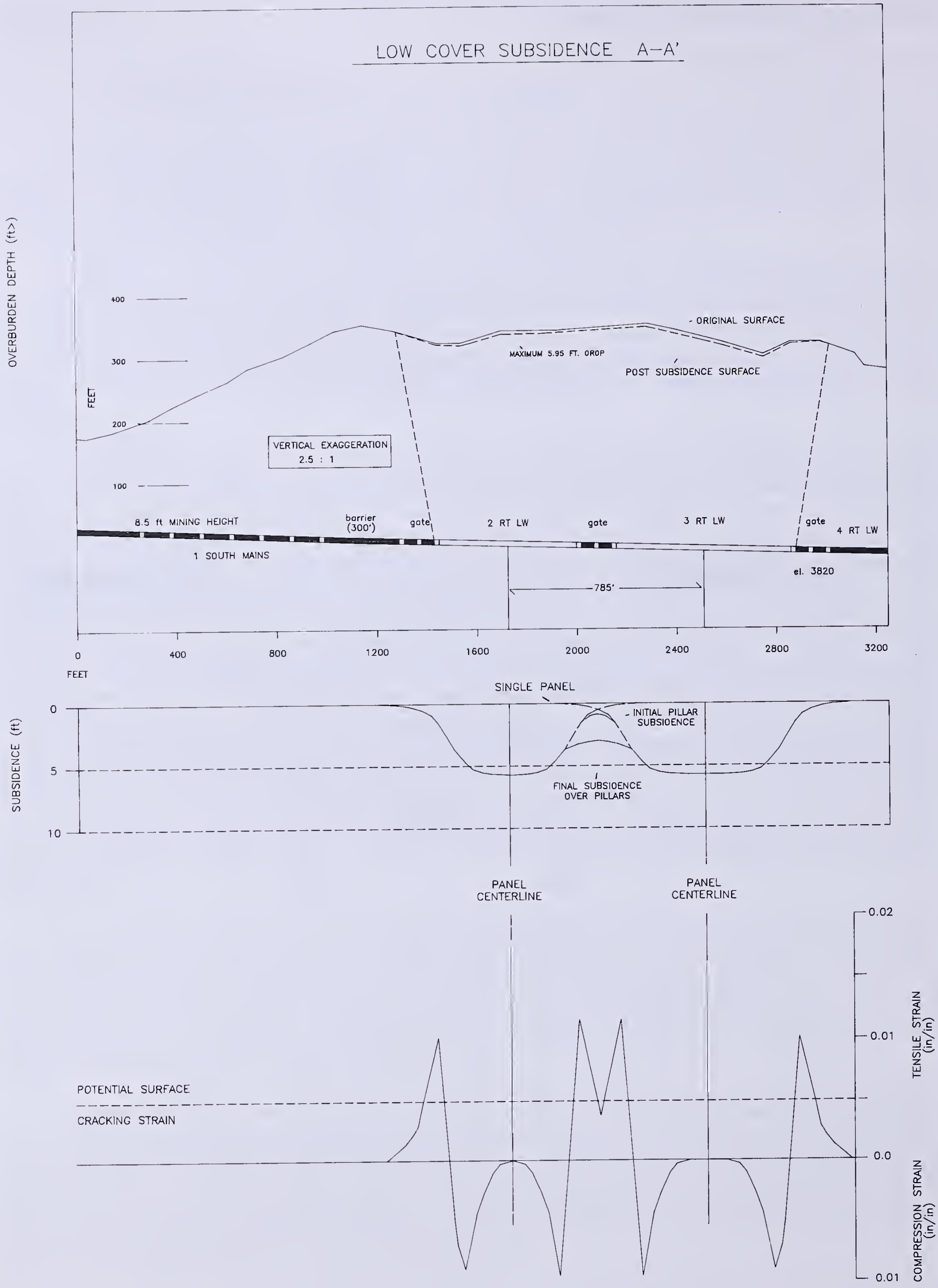
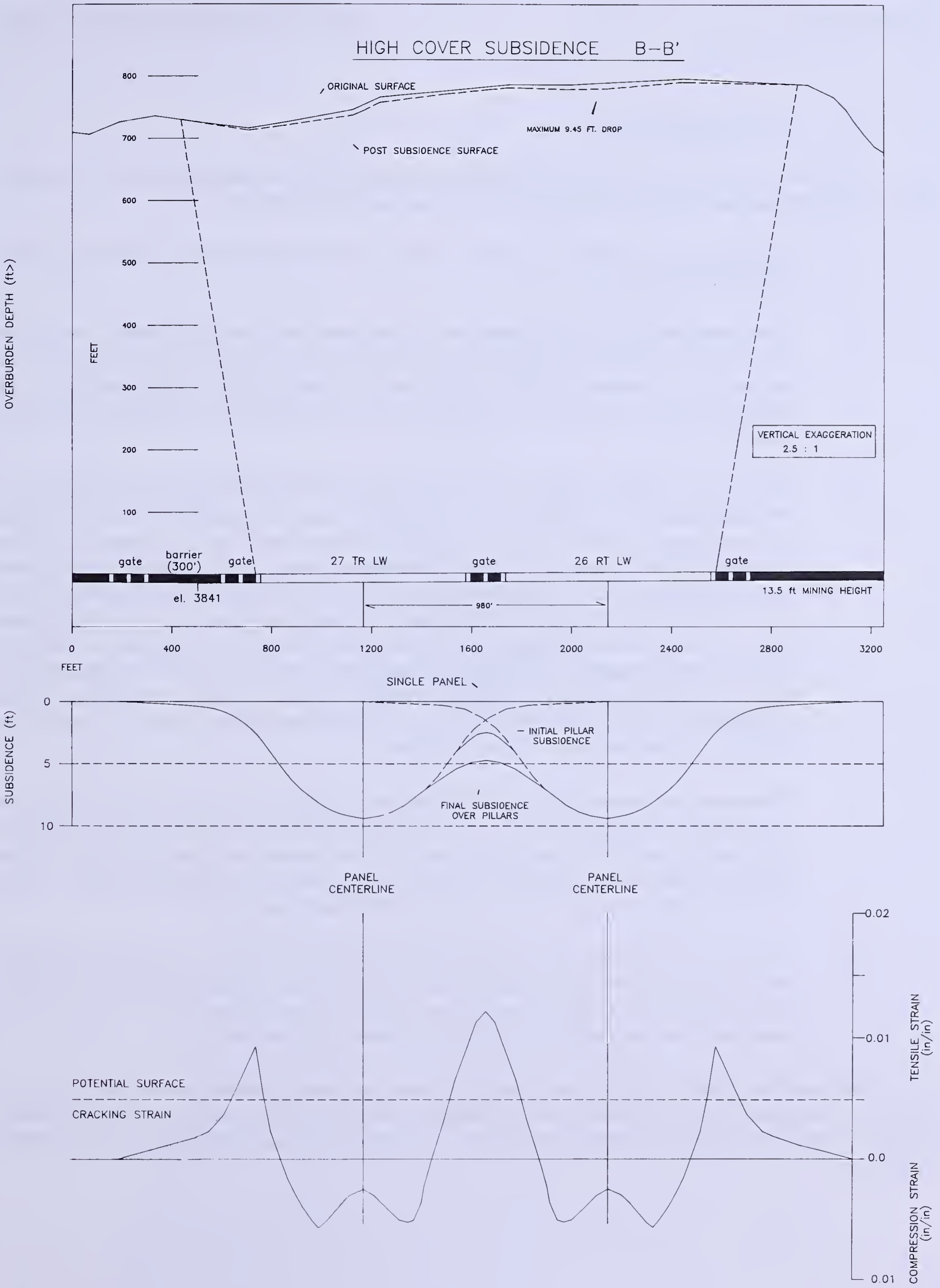

OVERBURDEN DEPTH (ft>)
FEET
800
700
600
500
400
300
200
100
ORIGINAL SURFACE
POST SUBSIDENCE SURFACE
Assumptions:
Mine height = 13.5 ft.
Subsidence factor = 70%
Angle of draw = 22.5 deg.
ANGLE OF DRAW
VERTICAL EXAGGERATION 2.5 : 1
gate
barrier (300')
gate
panel
gate
panel
gate
980'
(13.5 ft unmined coal)
0
400
800
1200
1600
2000
2400
2800
3200
FEET
SUBSIDENCE (ft)
0
5
10
SUBSIDENCE FROM SINGLE PANEL
SUBSIDENCE FROM 2 PANELS
extended
extended
extended
compressed
compressed
FINAL SUBSIDENCE OVER PILLARS
PANEL CENTERLINE
PANEL CENTERLINE
STRAIN CRITERION:
POTENTIAL SURFACE
CRACKING STRAIN
0.02
0.01
0.0
0.01
TENSILE STRAIN (in/in)
COMPRESSION STRAIN (in/in)

Figure C-4 Example of subsidence and strain profiles



LOW COVER SUBSIDENCE A–A'

OVERBURDEN DEPTH (ft>)
FEET
400
300
200
100
ORIGINAL SURFACE
MAXIMUM 5.95 FT. DROP
POST SUBSIDENCE SURFACE
VERTICAL EXAGGERATION
2.5 : 1
8.5 ft MINING HEIGHT
barrier
(300')
gate
2 RT LW
gate
3 RT LW
gate
4 RT LW
1 SOUTH MAINS
el. 3820
785'
0
400
800
1200
1600
2000
2400
2800
3200
FEET
SINGLE PANEL
INITIAL PILLAR SUBSIDENCE
SUBSIDENCE (ft)
0
5
10
FINAL SUBSIDENCE OVER PILLARS
PANEL CENTERLINE
PANEL CENTERLINE
0.02
0.01
0.0
0.01
TENSILE STRAIN (in/in)
COMPRESSION STRAIN (in/in)
POTENTIAL SURFACE
CRACKING STRAIN


HIGH COVER SUBSIDENCE B–B'
ORIGINAL SURFACE
MAXIMUM 9.45 FT. DROP
POST SUBSIDENCE SURFACE
OVERBURDEN DEPTH (ft>)
FEET
800
700
600
500
400
300
200
100
VERTICAL EXAGGERATION
2.5 : 1
gate
barrier
(300')
gate
27 TR LW
gate
26 RT LW
gate
el. 3841
980'
13.5 ft MINING HEIGHT
0
400
800
1200
1600
2000
2400
2800
3200
FEET
SINGLE PANEL
SUBSIDENCE (ft)
0
5
10
INITIAL PILLAR
SUBSIDENCE
FINAL SUBSIDENCE
OVER PILLARS
PANEL
CENTERLINE
PANEL
CENTERLINE
POTENTIAL SURFACE
CRACKING STRAIN
0.02
0.01
0.0
0.01
TENSILE STRAIN
(in/in)
COMPRESSION STRAIN
(in/in)

d. The Subsidence Event

The nature of subsidence, when load of the overburden is high compared with the rock strengths (that is, when the mined seam is fairly deep), may be summarized as follows:

- Sufficient coal is removed to open up the mine void and the roof support system is withdrawn or advanced.

- The immediate roof is fragmented and "bulks" into the mined area, while a percentage of the mining height (i.e., the subsidence factor) subsides all the way to the surface. The surface sags downward behind the advancing front of the mining activity. The subsidence trough formed at the surface (controlled by the angle of draw) is wider than the mined area.

- The advance of the mining activity also extends the deformation in the overburden. As the overburden rocks bend into the subsidence trough, new ground is placed in tension and new fractures open up. As the mining face passes under and progresses away from a particular point, the area of tensile stress moves away as well. Settling accompanied by compression takes over behind the area of stress and the tensional fractures tend to close. As successive areas are mined, this activity takes the form of a smooth subsidence wave. Pillars collapse under the overburden load when panels or rooms are mined on both sides of those pillars. This collapse can help to smooth out surface irregularities and help to close some of the remaining surface cracks. Massive sandstones in the overburden can also assist in smoothing out irregularities when they act as "beams" and produce a more complete collapse of pillars.

- Subsidence movement over longwall mines, and room-and-pillar mines where pillars have been robbed, tends to be relatively short-lived. Ninety to 95 percent of the subsidence is expected to occur once coal extraction in an area is complete (Dunrud 1984). Residual subsidence should be complete within 2 to 5 years after mining has ceased. Some delayed subsidence may occur over pillars that deteriorate slowly.

- Subsidence movement over room-and-pillar mines where pillars have been left behind tends to occur much slower, depending on the design and height of the pillars, and how much overburden weight rests on each pillar. Natural deterioration processes will eventually weaken the strongest pillar and cause it to collapse.

In situations where a mined area is fairly shallow and where massive sandstones in the roof provide some support to the overburden load, subsidence can occur abruptly with the entire load falling as a unit. Here, the surface expression may not be as smooth as that described above and larger cracks could result.

APPENDIX D

ROLES OF STATE AND FEDERAL AGENCIES IN PROJECT APPROVAL

State of Montana
Department of State Lands (DSL)
Coal and Uranium Bureau

Montana DSL is responsible for regulating coal mining operations within the State of Montana.

In April 1980, pursuant to Section 503 of the Federal Surface Mining Control and Reclamation Act (SMCRA) of 1977 as amended, the Secretary of the Interior approved Montana's permanent regulatory program, based on the Montana Strip and Underground Mine Reclamation Act (MSUMRA) of 1973 as amended, and its implementing regulations. Approval of the permanent program authorized Montana DSL to regulate surface coal-mining operations and surface effects of underground coal mining on non-Federal lands within the State. In April 1981, pursuant to Section 523(c) of SMCRA, Montana DSL entered into a cooperative agreement with the Secretary of the Interior authorizing Montana DSL to regulate surface coal-mining operations and surface effects of underground coal mining on Federal lands within the State.

Coal operators in Montana are required to submit detailed permit application packages (PAPs) to Montana DSL for proposed mining and reclamation operations in the State. Montana DSL reviews the PAP to ensure that the permit application complies with permitting requirements and that the coal mining operation will meet the performance standards of the approved Montana State permanent program, the Montana Environmental Policy Act, and other statutes. If it does comply, Montana DSL issues the applicant a *permit to conduct coal mining operations*. Montana DSL enforces the performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies.

State of Montana
Department of State Lands (DSL)
Board of Land Commissioners

Among the duties of the Board of Land Commissioners are the granting of *right-of-way use agreements* to railroads for the use of sections of land owned by the State and the lease of State-owned coal. These duties are specified in the Montana Code Annotated, 77-3-301 et seq. and 77-2-101 et seq., respectively. The Lands Division administers the rules implementing these statutes.

U.S. Department of the Interior
Office of Surface Mining Reclamation and Enforcement (OSM)

Prior to mining of Federal coal or affecting Federal surface estate, Meridian would have to obtain permits from OSM. OSM has primary responsibility to administer programs that regulate surface coal-mining operations and the surface effects of underground coal-mining operations.

Pursuant to the Montana cooperative agreement with the Secretary of the Interior, Federal coal lease holders and prospective coal operators affecting Federal surface estate in Montana must submit a PAP, containing a detailed mining plan and Federal permit application, to OSM for proposed mining and reclamation operations on Federal lands in the State. OSM and other Federal agencies review the PAP to ensure that it complies with the terms of the coal lease, the Mineral Leasing Act (MLA) of 1920 as amended, the National Environmental Policy Act (NEPA) of 1969 and other applicable Federal laws and their attendant regulations.

For those operations on leased Federal coal, OSM recommends approval, approval with conditions, or disapproval of the mining plan to the Assistant Secretary of the Interior, Land and Minerals Management. Before the mining plan can be approved, certain other Federal agencies, including the surface-managing agency, must concur with this recommendation. If all approvals and concurrences are received, OSM issues a Federal *permit to conduct coal mining operations* for those activities proposed on Federal lands.

Although Montana DSL enforces the performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies, OSM retains oversight responsibility of this enforcement.

U.S. Department of the Interior
Bureau of Land Management (BLM)

BLM is responsible for administering the Federal Land Policy and Management Act (FLPMA) of 1976 and certain provisions of the MLA on BLM-administered Federal lands.

Individuals or companies wishing to develop BLM-administered lands for private purposes must submit an application, containing a detailed plan of development to the BLM. BLM reviews the proposal for compliance with the resource management plan, Section 302 of FLPMA, and other Federal laws, including NEPA. BLM establishes a fair market rental fee for the subject property and issues a Federal *land use permit.*

Prospective coal lessees must submit an application to BLM to lease Federal coal estate in Montana. BLM reviews the application for compliance with the resource management plan, the MLA, and other Federal laws, including NEPA; determines the fair market value for the coal resource; and holds a competitive lease sale. If the sale is successful, BLM issues a Federal *coal lease* to the highest, qualified bidder who meets or exceeds the fair market value.

Federal coal lease-holders in Montana, pursuant to the Montana cooperative agreement with the Secretary of the Interior, must submit a PAP containing a detailed resource recovery and protection plan to BLM for proposed coal removal operations on Federal lands in the State. BLM reviews the PAP to ensure maximum economic recovery of the Federal coal resource and compliance with the MLA. Before the mining plan can be approved by the Secretary of the Interior, BLM must concur with OSM's recommendation on the mining plan.

Although Montana DSL enforces the performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies, BLM has authority in those emergency situations where Montana DSL or OSM inspectors cannot act before significant environmental harm or damage occurs.

U.S. Interstate Commerce Commission (ICC)
Office of Transportation Analysis

ICC is responsible for administering the Interstate Commerce Act, and the economic regulation of interstate surface transportation within the United States, including rail line construction and operation.

Parties seeking to construct and operate a rail line must file an application or a petition for exemption. The application must contain complete information concerning the applicant, its financial standing, the proposed transportation plan, specifics on the proposed construction and operation activities, and pertinent environmental data (49 CFR 1150). The Commission reviews the application and ensures compliance with the Interstate Commerce Act and all other applicable Federal laws and their attendant regulations. If the rail proposal is approved by the Commission, the ICC will issue a *certificate of public convenience and necessity* permitting construction and operation of the rail line.

An alternative procedure is the filing of a *petition seeking exemption of the project* from the prior approval requirements. This procedure may be used where the petitioner demonstrates that regulation is not necessary and the project is of limited scope and will not adversely affect shippers (49 CFR 1121).

1. Other Federal Responsibilities

U.S. Department of the Interior
Fish and Wildlife Service (USFWS)

Nature of responsibility: Consults on mitigation proposals for impacts to protected wildlife and vegetation species under their jurisdiction. Concurs on the biological opinion for impacts to threatened, endangered, or proposed species of fish, wildlife, or plants.

Authority: The Endangered Species Act of 1973 as amended, the Migratory Bird Treaty Act, the Bald Eagle Protection Act of 1973, and the Fish and Wildlife Coordination Act as amended.

U.S. Department of the Interior
Mine Safety and Health Administration (MSHA)

Nature of responsibility: Issues permits that cover roof control, ventilation, and other aspects of operational safety.

Authority: Mine Safety and Health Act of 1977.

U.S. Department of the Army
Corps of Engineers (Corps)

Nature of responsibility: Issues permits for the discharge of dredged materials or the placement of fill materials into the waters of the United States, including adjacent wetlands.

Authority: Section 404 of the Clean Water Act.

U.S. Department of the Treasury
Bureau of Alcohol, Tobacco, and Firearms

Nature of responsibility: Issues permits to purchase, store, and use explosives.

Authority: P.L. 91-452.

U.S. Federal Communications Commission (FCC)

Nature of responsibility: Issues licenses to operate industrial radio service and/or a remote, FM-radio base station at frequencies which do not interfere with existing frequencies within the transmitter range.

Authority: The Communications Act of 1934 as amended.

2. Other State Responsibilities

State of Montana
State Historical Society
State Historic Preservation Officer (SHPO)

Nature of responsibility: Under provisions of Federal Historic Preservation Law, is a consulting partner (with Montana DSL) in the prehistoric/historic/cultural resource protection process for mine permits during both premining and operational phases. Seeks a determination from the Keeper of the National Register for sites believed to be eligible for listing in the National Register of Historic Places. Issues a *State Antiquities Act permit*.

Authority: The archaeological provisions of MSUMRA, the Montana Antiquities Act, and the National Historic Preservation Act within the State of Montana.

State of Montana
Department of Health and Environmental Sciences (DHES)
Air Quality Bureau

Nature of responsibility: Issues a State *air quality permit* and an *open burning permit*.

Authority: The Montana Clean Air Act.

State of Montana
Department of Health and Environmental Sciences (DHES)
Water Quality Bureau

Nature of responsibility: Issues a *State Pollutant Discharge Elimination System permit.*
Authority: The Montana Water Quality Act.

State of Montana
Department of Natural Resources and Conservation (DNRC)
Water Resources Division

Nature of responsibility: Approves *water use permits*, assigns water rights, and approves dam designs. The agency grants *water use permits* for wells producing 35gpm or more. Permit holders may be inspected at random after obtaining a permit.

Prior to construction of a dam with over 50-acre feet normal capacity, a *hazard classification* must be applied for. There is no regular monitoring by the agency after the hazard classification is obtained.

Authority: The Montana Water Use Act.

State of Montana
Department of Natural Resources and Conservation (DNRC)
Facility Siting Bureau

Nature of responsibility: Approves powerline upgrades over 69 kV and powerline extensions of 10 miles or more.

Authority: The Montana Major Facility Siting Act.

State of Montana
Department of Transportation (MDT)
Area Maintenance Bureau

Nature of responsibility: Issues a *road approach permit.*
Authority: Montana Code Annotated, 61-5-101 et seq.

State of Montana
Department of Transportation (MDT)
Motor Carrier Services Division

Nature of responsibility: Inspects common carriers to ensure that they do not exceed the load limits set for Montana highways.

Authority: Montana Code Annotated, 61-10-201 et seq.

APPENDIX E

TECHNICAL TABLES

TABLE E-1

Climatological Summary for Logan International Airport, Billings, Montana

NORMALS, MEANS, AND EXTREMES

Month	Temperature							Normal Degree Days Base 65°F		Precipitation in Inches										
	Normal			Extremes						Water Equivalent							Snow, Ice Pellets			
	Daily Maximum	Daily	Monthly	Record Highest	Year	Record Lowest	Year	Heating	Cooling	Normal	Maximum	Year	Minimum	Year	Maximum in	Year	Maximum	Year	Maximum in	Year
(a)				45		45					45		45		45		45		41	
J	31.2	12.5	21.9	68	1953	-30	1937	1336	0	0.70	2.35	1972	0.04	1941	1.41	1972	27.7	1963	16.6	1972
F	37.1	17.7	27.4	72	1961	-38	1936	1053	0	0.64	1.77	1978	0.05	1977	0.61	1952	22.4	1978	9.0	1944
M	42.1	23.1	32.6	79	1978	-19	1951	1004	0	1.01	2.70	1954	0.13	1936	1.01	1973	27.6	1935	10.5	1964
A	55.8	33.4	44.6	87	1962	-5	1936	612	0	1.56	4.42	1955	0.06	1962	3.19	1978	42.3	1955	23.7	1955
M	65.7	43.3	54.5	96	1935	14	1954	333	8	2.08	6.97	1978	0.53	1937	2.83	1952	7.7	1967	5.7	1967
J	73.7	51.5	62.6	102	1966	32	1969	131	59	2.61	7.64	1944	0.24	1961	2.78	1937	2.0	1950	2.0	1950
J	85.6	58.0	71.8	106	1937	41	1972	10	220	0.87	3.12	1958	0.07	1976	1.87	1958	0.0		0.0	
A	93.8	56.3	70.1	105	1961	40	1939	15	173	1.00	3.50	1965	0.05	1955	2.47	1965	0.0		0.0	
S	71.3	46.5	58.9	100	1950	25	1972	221	38	1.39	4.99	1941	0.06	1964	2.19	1966	6.3	1962	6.3	1962
O	61.0	37.5	49.3	90	1963	3	1971	487	0	0.88	3.80	1971	0.02	1948	1.98	1974	23.1	1949	10.0	1949
N	45.0	26.4	35.7	73	1975	-22	1959	879	0	0.73	2.34	1978	T	1954	1.37	1959	25.2	1978	15.3	1959
D	35.8	17.7	26.8	69	1957	-26	1964	1184	0	0.68	2.00	1973	0.05	1957	0.96	1978	28.8	1955	13.7	1978
YR	57.3	35.3	46.3	106	JUL 1937	-38	FEB 1936	7265	498	14.15	7.64	JUN 1944	T	NOV 1954	3.19	APR 1978	42.3	APR 1955	23.7	APR 1955

Table E-1 (Continued)

Month	Relative Humidity Pct.				Wind					Pct. of Possible Sunshine	Mean Sky Cover, tenths, Sunrise to Sunset	Mean Number of Days											Average Station pressure mb. Elev. 3,570 feet m.s.l.
							Fastest Mile					Sunrise to sunset							Temperatures °F Max.		Min.		
	Hour 05 (Local Time)	Hour 11	Hour 17	Hour 23	Mean Speed m.p.h.	Prevailing Direction	Speed m.p.h.	Direction	Year			Clear	Partly Cloudy	Cloudy	Precipitation .01 or more	Snow, Ice Pellets 1.0 inch of more	Thunderstorms	Heavy Fog, Visibility ¼ Mile or Less	(b) 90°F Above	32°F and	32°F and Below	0°F and Below	
(a)	20	20	20	20	40	15	36	36		40	40	40	40	40	45	37	40	32	20	20	20	20	7
J	64	61	58	64	13.1	SW	66	W	1953	47	7.2	5	8	18	8	4	*	1	0	16	28	10	890.9
F	65	58	53	62	12.5	SW	72	W	1963	54	7.1	4	8	16	7	3	*	2	0	8	25	3	890.3
M	67	53	46	61	11.7	SW	61	NW	1956	62	7.1	4	9	18	9	3	*	2	0	6	24	2	887.6
A	68	50	42	60	11.7	SW	72	NW	1947	59	7.1	4	9	17	10	2	1	3	0	1	14	0	889.0
M	69	48	43	60	11.0	NE	68		1939	61	6.6	6	10	15	11	*	4	1	*	0	2	0	889.1
J	71	47	41	59	10.4	SW	79	NW	1968	64	5.9	7	12	11	11	*	8	1	3	0	*	0	889.9
J	63	39	31	49	9.7	SW	73	N	1947	77	4.0	14	12	5	7	0	8	*	12	0	0	0	892.0
A	60	40	30	46	9.7	SW	66	N	1947	76	4.2	14	11	6	6	0	6	*	11	0	0	0	891.7
S	66	48	38	54	10.4	SW	61	NW	1949	68	5.1	10	10	10	7	*	2	1	2	0	1	0	892.8
O	63	49	41	55	11.1	SW	68	NW	1949	62	5.7	9	10	12	6	1	*	2	*	1	8	0	892.4
N	66	58	54	62	12.3	SW	63	NW	1948	46	6.8	6	8	16	6	2	0	2	0	6	23	1	891.6
D	64	60	57	63	13.2	WSW	66	NW	1953	45	6.8	6	9	16	7	3	*	2	0	12	28	4	889.9
YR	66	51	44	58	11.4	SW	79	NW	JUN 1968	62	6.1	89	116	160	95	19	29	18	28	49	151	19	890.6

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Highest temperatures 112 in July 1901; lowest temperature -49 in February 1989; minimum monthly precipitation 0.00 in October 1896.

(a) Length or record, years, through the current year unless otherwise noted, based on January data.
(b) 70°F and Above at Alaskan stations.
* Less than on half.
T Trace.

NORMALS - Based on record for the 1941-1970 period.
DATE OF AN EXTREME - The most recent in cases of multiple occurrence.
WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
FASTEST MILE WIND - Speed in fastest observed 1-minute value when the direction is tens of degrees.

Source: Ruffner 1980.

TABLE E-2

Bull Mountains Mine No. 1
Spring Information

Spring Number	Location[1] (TRS ¼ ¼)	Within Life-of-Mine Area	Elev.[2] (ft.)	Flow Range (gpm)	Flow Average (gpm)	Specific Cond.[3] (µmhos/cm)	Development
11115	T6N,R27E, SEC 6 Cb	No	4004	0.1-1.5	0.7	2023	2 Steel Tanks
11125	T6N,R27E, SEC 6 Cb	No	3960	Dry-0.3	0.03	1847	No Development
11185	T6N,R26E, SEC 12 Aa	No	3849	Pond	Pond	2276	1 Large Pond
11555	T6N,R26E, SEC 2 Ac	No	3870	Dry-Pond	Pond	2700	No Development
14115	T6N,R27E, SEC 16 Dd	Yes	4460	0.8-3.3	1.8	542	1 Steel Tank
14155	T6N,R27E, SEC 15 Cd	Yes	4440	Pond-3.8	0.9	718	No Development
14165	T6N,R27E, SEC 15 Cb	Yes	4340	Pond-1.6	1.6	930	No Development
14255	T6N,R27E, SEC 16 Ac	Yes	4203	0.3-30.0	7.9	1001	1 Small Pond
14325	T6N,R27E, SEC 17 Aa	Yes	4095	1.0-39.0	12.5	1144	2 Large Ponds
14415	T6N,R27E, SEC 8 Dc	Yes	4070	Pond-1.5	0.3	1314	1 Small Pond
14535	T6N,R27E, SEC 8 Ca	Yes	4000	Pond-0.5	0.1	1540	No Development
14555	T6N,R27E, SEC 8 Ca	Yes	4070	Dry-0.3	0.1	1360	1 Small Pond
14655	T6N,R27E, SEC 8 Bb	No	4040	Dry-1.0	0.2	1644	No Development
14755	T6N,R27E, SEC 6 Dc	No	4000	Dry-0.3	0.04	2492	1 Small Pond
14785	T6N,R27E, SEC 7 Ac	No	3925	0.3-6.0	1.0	1867	1 Large Pond
16135	T6N,R27E, SEC 22 Cb	Yes	4486	1.0-18.0	7.3	556	Stream Channel Flow
16145	T6N,R27E, SEC 21 Da	Yes	4480	0.3-3.5	1.8	598	Stream Channel Flow
16165	T6N,R27E, SEC 21 Ad	Yes	4440	Dry-1.3	0.6	899	No Development
16255	T6N,R27E, SEC 21 Ac	Yes	4368	Pond-23.5	4.7	792	No Development
16275	T6N,R27E, SEC 21 Ac	Yes	4350	Pond-3.0	0.6	747	1 Small Pond
16355	T6N,R27E, SEC 21 Ba	Yes	4282	2.3-66.0	17.2	828	Stream Channel Flow
16365	T6N,R27E, SEC 21 Bb	Yes	4237	0.3-24.0	9.2	832	Stream Channel Flow
16625	T6N,R27E, SEC 17 Db	Yes	4118	0.1-3.0	1.5	1904	No Development
16655	T6N,R27E, SEC 17 Ac	Yes	4069	11.5-68.0	16.2	1137	1 Large Pond
16755	T6N,R27E, SEC 17 Ab	Yes	4176	0.1-1.0	0.4	1549	1 Steel Tank
16855	T6N,R27E, SEC 17 Bb	Yes	4041	Pond-0.5	0.2	2771	No Development
16955	T6N,R27E, SEC 18 Aa	Yes	3961	Dry-41.8	6.0	1417	No Development
17115	T6N,R27E, SEC 33 Ba	No	4550	Pond-1.5	0.8	825	1 Small Pond
17145	T6N,R27E, SEC 28 Cd	No	4483	0.1-4.3	1.4	994	1 Wood Tank
17165	T6N,R27E, SEC 28 Cb	No	4360	Pond-2.3	0.3	1144	1 Large Pond
17185	T6N,R27E, SEC 29 Ad	No	4302	0.1-9.0	3.9	1390	Pond and Tank
17215	T6N,R27E, SEC 28 Ac	No	4500	Pond-1.5	0.6	916	1 Small Ponds
17255	T6N,R27E, SEC 28 Bc	No	4310	Pond	Pond	925	1 Small Pond
17275	T6N,R27E, SEC 29 Aa	No	4276	0.3-10.0	3.8	1220	1 Steel Tank
17315	T6N,R27E, SEC 20 Dc	No	4188	1.5-11.0	5.1	1270	1 Small Pond 1 Deep Well Not in Use
17415	T6N,R27E, SEC 20 Bc	Yes	4071	0.2-30.7	9.5	1705	2 Large Ponds
17515	T6N,R27E, SEC 17 Cc	Yes	4014	0.1-6.5	2.1	1776	1 Small Pond
17635	T6N,R27E, SEC 21 Bd	Yes	4470	Pond-1.5	0.6	896	1 Small Pond
17655	T6N,R27E, SEC 21 Bc	Yes	4250	Dry-5.0	1.7	1506	No Development
17685	T6N,R27E, SEC 20 Aa	Yes	4150	0.8-12.0	6.5	1861	1 Small Pond
31555	T7N,R27E, SEC 18 Bc	No	3610	Pond	Pond	1885	1 Small Pond
41125	T6N,R27E, SEC 6 Ba	No	4136	0.3-2.0	0.6	1853	2 Small Ponds
41135	T7N,R27E, SEC 31 Cd	No	4100	Pond	Pond	1975	1 Large Pond

TABLE E-2 (Continued)

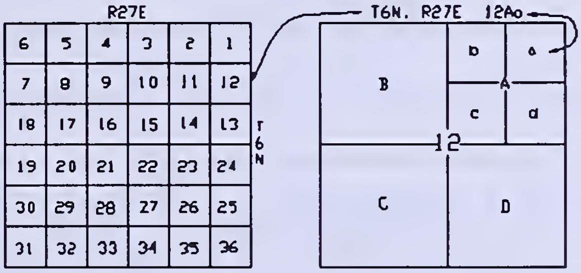
Spring Number	Location[1] (TRS ¼ ¼)	Within Life-of-Mine Area	Elev.[2] (ft.)	Flow Range (gpm)	Flow Average (gpm)	Specific Cond.[3] (µmhos/cm)	Development
41155	T7N,R27E, SEC 31 Bc	No	4075	Dry	Dry	–	No Development
41165	T7N,R27E, SEC 31 Ab	No	3980	Pond	Pond	NA[4]	1 Small Pond
41175	T7N,R27E, SEC 31 Ab	No	4010	Pond	Pond	1855	1 Small Pond
41185	T7N,R27E, SEC 31 Ba	No	4020	Pond	Pond	1864	1 Pond and Tank
41215	T6N,R27E, SEC 6 Ba	No	4419	0.1-1.0	0.4	628	1 Steel Tank
41225	T7N,R27E, SEC 32 Dc	No	4200	Dry-0.3	0.1	1448	No Development
41275	T7N,R27E, SEC 31 Aa	No	4010	Pond	Pond	1475	1 Small Pond
41315	T7N,R27E, SEC 30 Db	No	3955	Pond	Pond	NA[4]	NA[4]
41335	T7N,R27E, SEC 30 Db	No	3960	Pond	Pond	2697	1 Steel Tank
41425	T7N,R26E, SEC 25 Cd	No	4030	Pond	Pond	1816	1 Steel Tank
41445	T7N,R26E, SEC 25 Db	No	3970	NA[4]	NA[4]	NA[4]	NA[4]
41545	T7N,R27E, SEC 29 Ab	No	3870	Pond	Pond	3550	1 Small Pond
41555	T7N,R27E, SEC 20 Cd	No	3840	NA[4]	NA[4]	2050	No Development
41575	T7N,R27E, SEC 20 Cd	No	3800	Dry	Dry	–	Old Mine Entry
41585	T7N,R27E, SEC 16 Cc	No	3680	Pond	Pond	1465	1 Small Pond
41625	T7N,R27E, SEC 28 Bc	No	3940	Pond	Pond	3713	1 Large Pond
41635	T7N,R27E, SEC 28 Bc	No	3920	NA[4]	NA[4]	1810	No Development
41665	T7N,R27E, SEC 21 Bc	No	3740	Pond	Pond	1993	1 Small Pond
41685	T7N,R27E, SEC 16 Ca	No	3655	Pond	Pond	1730	1 Large Pond
41755	T7N,R27E, SEC 22 Bb	No	3610	NA[4]	NA[4]	NA[4]	NA[4]
41825	T7N,R27E, SEC 22 Bb	No	3700	NA[4]	NA[4]	NA[4]	NA[4]
41925	T7N,R27E, SEC 14 Db	No	3775	NA[4]	NA[4]	NA[4]	NA[4]
41945	T7N,R27E, SEC 14 Ca	No	3740	NA[4]	NA[4]	NA[4]	NA[4]
41985	T7N,R27E, SEC 15 Ba	No	3580	Pond	Pond	1445	1 Small Pond
51175	T7N,R27E, SEC 26 Cc	No	3740	0.3-1.8	0.6	2034	No Development
51255	T7N,R27E, SEC 36 Db	No	3707	0.5-6.3	3.5	2450	No Development
51445	T7N,R27E, SEC 26 Cb	No	3780	Dry-Pond	Pond	1060	No Development
51465	T7N,R27E, SEC 26 Bd	No	3700	Dry-Pond	Pond	2332	No Development
51485	T7N,R27E, SEC 26 Ab	No	3655	Dry	Dry	-	No Development
52125	T6N,R27E, SEC 9 Da	Yes	4200	Pond-6.0	1.2	1278	1 Small Pond
52145	T6N,R27E, SEC 9 Ad	Yes	4060	Dry-Pond	Pond	1103	1 Small Pond
52165	T6N,R27E, SEC 3 Cc	Yes	3980	Pond-3.3	1.0	1749	2 Small Ponds
52225	T6N,R27E, SEC 9 Bd	Yes	4072	0.3-2.3	0.7	1552	No Development
52235	T6N,R27E, SEC 9 Bd	Yes	4100	Dry-0.5	0.1	1690	No Development
52255	T6N,R27E, SEC 9 Bb	Yes	4090	Dry-0.1	0.02	1889	No Development
52275	T6N,R27E, SEC 4 Dd	Yes	3960	Dry-0.8	0.1	1871	No Development
52355	T6N,R27E, SEC 4 Ca	Yes	4038	Dry-2.0	0.5	1542	No Development
52365	T6N,R27E, SEC 4 Ca	Yes	4028	Dry	Dry	–	No Development
52375	T6N,R27E, SEC 4 Ac	Yes	3950	Dry-0.8	0.1	1768	Pond
52455	T6N,R27E, SEC 3 Bc	Yes	3840	0.8-10.2	4.4	2042	2 Small Ponds
52525	T6N,R27E, SEC 5 Ab	No	4286	0.1-2.0	0.6	772	1 Steel Tank
52535	T6N,R27E, SEC 5 Aa	No	4110	1.0-6.0	2.6	910	No Development
52545	T7N,R27E, SEC 33 Cb	No	4100	Pond-0.3	0.2	1485	No Development
52565	T7N,R27E, SEC 33 Dc	No	3960	Dry	Dry	-	No Development
52655	T7N,R27E, SEC 34 Cd	No	3788	0.1-24.0	3.5	2165	No Development

TABLE E-2 (Continued)

Spring Number	Location[1] (TRS ¼ ¼)	Within Life-of-Mine Area	Elev.[2] (ft.)	Flow Range (gpm)	Flow Average (gpm)	Specific Cond.[3] (µmhos/cm)	Development
52855	T7N,R27E, SEC 35 Bd	No	3690	Pond-1.5	0.2	2223	No Development
53115	T6N,R27E, SEC 15 Dc	Yes	4340	Pond-7.8	1.9	700	No Development
53125	T6N,R27E, SEC 15 Dc	Yes	4400	0.3-2.0	0.9	683	No Development
53145	T6N,R27E, SEC 15 Ac	Yes	4180	Pond-0.5	0.2	1132	No Development
53155	T6N,R27E, SEC 15 Ac	Yes	4180	Pond-6.0	1.9	1058	No Development
53175	T6N,R27E, SEC 15 Aa	Yes	4038	Pond-12.0	2.4	1033	1 Large Pond
53195	T6N,R27E, SEC 11 Ca	No	3917	Pond-19.8	4.9	1448	No Development
53225	T6N,R27E, SEC 14 Ca	Yes	4113	Dry-0.5	0.1	1979	No Development
53245	T6N,R27E, SEC 14 Bd	Yes	3980	Dry-0.5	0.1	2789	No Development
53285	T6N,R27E, SEC 11 Cd	Yes	3980	Pond-3.5	0.5	2458	2 Small Ponds
53325	T6N,R27E, SEC 13 Ca	No	4100	Dry-3.3	0.8	3972	No Development
53335	T6N,R27E, SEC 13 Cb	No	4080	Pond-0.6	0.2	4356	No Development
53385	T6N,R27E, SEC 11 Dc	No	3940	Dry-1.0	0.1	3597	No Development
53415	T6N,R27E, SEC 11 Bd	No	3880	Dry-10.3	1.8	2351	No Development
53455	T6N,R27E, SEC 11 Ba	No	3820	Pond-4.5	1.2	1962	No Development
53465	T6N,R27E, SEC 2 Cd	No	3800	Pond-0.8	0.1	1741	No Development
53475	T6N,R27E, SEC 2 Dc	No	3815	Pond-9.8	1.6	2067	No Development
53485	T6N,R27E, SEC 2 Dc	No	3802	1.5-9.5	4.0	2348	No Development
53495	T6N,R27E, SEC 2 Db	No	3780	Pond-0.3	0.03	2379	No Development
53525	T6N,R27E, SEC 10 Bd	Yes	4040	Pond-0.5	0.1	2461	No Development
53535	T6N,R27E, SEC 10 Bd	Yes	4040	Dry-0.3	0.04	1760	1 Small Pond
53545	T6N,R27E, SEC 10 Bd	Yes	4000	Pond-0.1	0.02	2473	No Development
53575	T6N,R27E, SEC 10 Aa	No	3890	Pond-0.8	0.2	1748	No Development
53615	T6N,R27E, SEC 13 Ac	No	4080	Dry-3.3	1.0	3330	No Development
53635	T6N,R27E, SEC 13 Ba	No	4030	Dry-1.3	0.4	3620	No Development
53685	T6N,R27E, SEC 2 Da	No	3780	Pond-1.0	0.1	1796	No Development
53755	T6N,R27E, SEC 2 Bc	No	3800	Pond-3.5	1.4	1443	1 Large Pond
53855	T7N,R27E, SEC 35 Cd	No	3760	Dry-Pond	Pond	1118	No Development
71115	T6N,R27E, SEC 22 Ab	Yes	4416	1.3-9.0	4.3	488	2 Steel Tanks
71125	T6N,R27E, SEC 22 Bd	Yes	4460	Pond-1.0	0.4	527	No Development
71355	T6N,R27E, SEC 23 Dc	No	4060	Pond-1.8	0.4	2688	No Development
71425	T6N,R27E, SEC 24 Cc	No	3920	Dry-0.8	0.2	1236	1 Large Pond
71445	T6N,R27E, SEC 24 Cc	No	3900	Pond-1.5	0.4	1738	No Development
71465	T6N,R27E, SEC 24 Cd	No	3868	2.0-16.5	7.8	1432	1 Steel Tank
72115	T6N,R27E, SEC 27 Bb	No	4540	Pond-1.3	0.6	424	1 Steel Tank
72125	T6N,R27E, SEC 27 Ba	No	4340	0.3-3.0	1.8	862	1 Steel Tank
72135	T6N,R27E, SEC 27 Ba	No	4340	0.3-1.5	0.5	1009	No Development
72155	T6N,R27E, SEC 27 Ac	No	4216	0.3-16.7	4.1	1117	No Development
72175	T6N,R27E, SEC 27 Da	No	4140	Pond-7.0	1.2	1609	1 Small Pond
72185	T6N,R27E, SEC 26 Cc	No	4064	Pond-6.5	2.3	2071	1 Large Pond
92155	T7N,R26E, SEC 25 Cb	No	3830	Pond	Pond	2361	1 Small Pond

TABLE E-2 (Continued)

[1] Locations for the springs use USGS designations for 1/4 1/4 sections. This diagram illustrates that for a spring located in the NE corner of Township 6 North (T6N), Range 27 East (R27E), Section 12 (Sec 12) the 1/4 1/4 designation would be "Aa".



[2] Elevations surveyed or estimated from USGS 7.5 minute topographic maps.

[3] CLASSIFICATION OF GROUNDWATER (MONTANA ADMINISTRATIVE RULE 16.20.1002)
CLASS I - <1,000 μmhos/cm
CLASS II - 1,000 to 2,500 μmhos/cm
CLASS III - 2,500 to 15,000 μmhos/cm
CLASS IV - >15,000 μmhos/cm

[4] NA - Data Not Available

* Classification (ARM 16.20.1002) of Ground water

"The ground waters of the State of Montana are classified as follows:

(a) Class I ground waters are generally suitable for public and private water supplies, culinary and food processing purposes, irrigation, livestock and wildlife watering, and for commercial and industrial purposes with little or no treatment. Class I ground waters have a specific conductance of less than 1000 micromhos/cm at 25°C.

(b) Class II ground waters are generally marginally suitable for public and private water supplies, culinary and food processing uses and are suitable for irrigation of some agricultural crops, for drinking water for most wildlife and livestock, and for most commercial and industrial purposes. Class II ground waters may be used for municipal or domestic water supplies in areas where better quality water is not readily available. Class II ground waters have specific conductance ranging from 1000 to 2500 micromhos/cm at 25°C.

(c) Class III ground waters are suitable for some industrial and commercial uses and as drinking water for some wildlife and livestock and for irrigation of some salt-tolerant crops using special water management practices. In some cases Class III ground waters are the only economically feasible source for municipal or domestic water supplies. Class III ground waters have specific conductance ranging from 2500 to 15,000 micromhos/cm at 25°C.

(d) Class IV ground waters may be suitable for some industrial, commercial and other uses, but are unsuitable or, for practical purposes, untreatable for higher class beneficial uses. These ground waters have specific conductance greater than 15,000 micromhos/cm at 25°C."

TABLE E-3
Bull Mountains Mine No. 1
Hydrology Matrix for Spring Ranking

WATER AVAILABILITY	SCORE
ALL YEAR	4
OCCASIONALLY FROZEN	3
OCCASIONALLY DRY AND/OR FROZEN	2
FREQUENTLY DRY	1

+

AVERAGE FLOW GALLONS PER MINUTE (GPM)	SCORE
> 10 GPM	4
5 TO 10 GPM	3
1 TO 5 GPM	2
< 1 GPM	1

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AVERAGE QUALITY MONTANA ARM 16 20 1002 CRITERIA	SCORE
CLASS I	4
CLASS II	3
CLASS III	2
CLASS IV	1

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HYDROLOGY SCORE USED IN TABLE III-3 CUMULATIVE

TABLE E-4
Bull Mountains Mine No. 1
Aquatic Ecology Matrix for Spring Ranking

HABITAT DIVERSITY (RELATES TO HABITAT FORM PROVIDING THE DEGREE OF MULTIPLE USE)	SCORE
HABITAT IS PERENNIAL AND IN THE FORM OF SPRING FLOW WITH PONDED WATER	4
HABITAT IS PERENNIAL AND IN THE FORM OF SPRING FLOW WITH STREAM POOLS	3
HABITAT IS PERENNIAL AND IN THE FORM OF SPRING SEEPAGE	2
HABITAT IS INTERMITTENT AND IN THE FORM OF SPRING SEEPAGE	1

+

HABITAT EXTENT (RELATES TO AMOUNT OF HABITAT IN FORM AND FUNCTION)	SCORE
HABITAT IS PERENNIAL WITH HIGH EXTENT	4
HABITAT IS PERENNIAL WITH MODERATE EXTENT	3
HABITAT IS PERENNIAL WITH LOW EXTENT	2
HABITAT IS LIMITED IN EXTENT AND SEASONAL AVAILABILITY	1

+

MACROINVERTEBRATE DIVERSITY (RELATES TO NUMBERS OF INDIVIDUALS AND TAXA FOUND SEASONALLY)	SCORE
DIVERSITY AND DENSITY ARE HIGH	4
DIVERSITY AND DENSITY ARE MODERATE	3
DIVERSITY AND DENSITY ARE LOW	2
DIVERSITY AND DENSITY ARE LIMITED	1

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PERIPHYTON DIVERSITY (RELATES TO NUMBERS OF INDIVIDUALS AND TAXA FOUND SEASONALLY)	SCORE
DIVERSITY AND DENSITY ARE HIGH	4
DIVERSITY AND DENSITY ARE MODERATE	3
DIVERSITY AND DENSITY ARE LOW	2
DIVERSITY AND DENSITY ARE LIMITED	1

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AQUATICS SCORE USED IN TABLE III-3 CUMULATIVE

TABLE E-5

Bull Mountains Mine No. 1
Hydrophytic Vegetation Matrix for Spring Ranking

SPRING DESCRIPTION	VEGETATION SCORE USED IN TABLE III-3 CUMULATIVE
NATIVE PLANTS VERY DOMINANT, OVERALL SPECIES DIVERSITY AND DIVERSITY OF HYDROPHYTIC ZONES HIGH, LARGE AREAL EXTENT OF HYDROPHYTIC VEGETATION. RELATIVELY LOW MANIFESTATION OF RECENT DISTURBANCE.	4
NATIVE PLANTS DOMINANT OVER INTRODUCED SPECIES, OVERALL SPECIES DIVERSITY AND DIVERSITY OF HYDROPHYTIC ZONES MODERATELY HIGH, MODERATELY LARGE AREAL EXTENT OF HYDROPHYTIC VEGETATION. MODERATE RECENT DISTURBANCE.	3
NATIVE AND INTRODUCED PLANTS CO-DOMINANT, SPECIES AND ZONAL DIVERSITY MODERATE, MODERATE OR SMALL AREAL EXTENT. RECENT DISTURBANCE OFTEN EXTENSIVE.	2
INTRODUCED PLANTS OFTEN DOMINANT, SPECIES AND ZONAL DIVERSITY LOW, SMALL AREAL EXTENT. RECENT DISTURBANCE OFTEN EXTENSIVE.	1

TABLE E-6

Bull Mountains Mine No. 1
Land Use Matrix for Spring Ranking

SPRING DEVELOPMENT (RELATES TO TYPE AND AMOUNT OF DEVELOPMENT)	SCORE
SPRING IS DEVELOPED WITH LARGE POND AND/OR OTHER WATER PRODUCING STRUCTURE	4
SPRING IS DEVELOPED WITH SMALL POND	3
SPRING IS DEVELOPED WITH STOCK TANK	2
SPRING HAS NO DEVELOPMENT	1

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RANCH USE (RELATED TO IMPORTANCE OF SPRING AND POSITION RELATIVE TO RANCH AND PASTURE USE)	SCORE
SPRING IS OF HIGH USE FOR RANCH OPERATIONS	4
SPRING IS OF MODERATE USE FOR RANCH OPERATIONS	3
SPRING IS OF LOW USE FOR RANCH OPERATIONS	2
SPRING IS OF LIMITED USE FOR RANCH OPERATIONS	1

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ECOLOGICAL IMPORTANCE (RELATES TO IMPORTANCE AND POSITION OF SPRING RELATIVE TO ECOLOGICAL SURROUNDINGS)	SCORE
SPRING IS OF HIGH IMPORTANCE	4
SPRING IS OF MODERATE IMPORTANCE	3
SPRING IS OF LOW IMPORTANCE	2
SPRING IS OF LIMITED IMPORTANCE	1

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LAND USE SCORE USED IN TABLE III-3 CUMULATIVE

TABLE E-7

Bull Mountains Mine No. 1
Wildlife Matrix for Spring Ranking

SPRING DESCRIPTION	WILDLIFE SCORE USED IN TABLE III-3 CUMULATIVE
PERENNIAL, GOOD TO EXCELLENT HABITAT, WITH GOOD TOPOGRAPHIC AND/OR VEGETATIVE COVER, OPEN WATER. LITTLE OR NO LIVESTOCK USE.	4
GENERALLY PERENNIAL, OFTEN A LONG REACH OF PARTIALLY OPEN WATER, FAIR TOPOGRAPHIC AND/OR VEGETATIVE COVER. LIGHT TO MODERATE LIVESTOCK USE.	3
MAY HAVE SOME DESIRABLE CHARACTERISTICS FOR WILDLIFE, BUT GENERALLY LIMITED BY LOW FLOWS, INTERMITTENT NATURE. HEAVY LIVESTOCK USE, OR LIMITED COVER.	2
SEVERELY LIMITED DUE TO LOW FLOW, LITTLE OR NO TOPOGRAPHIC AND/OR VEGETATIVE COVER. HEAVY LIVESTOCK USE.	1

TABLE E-8

Bull Mountains Mine No. 1 Spring Impact Potential, Relative Importance of Potentially-Impacted Springs, and Severity of Impacts

Spring	Location[1] (TRS¼¼)	Within Life-of-Mine Area	Potential for Impact	Relative Importance of Potentially-Impacted Springs[2]	Severity of Impact Prior to Mitigation
11115	T6N,R27E, SEC 6 CB	No	None		
11125	T6N,R27E, SEC 6 CB	No	None		
11185	T6N,R26E, SEC 12 AA	No	None		
11555	T6N,R26E, SEC 2 AC	No	None		
14115	T6N,R27E, SEC 16 DD	Yes	Low	Low	Negligible
14155	T6N,R27E, SEC 15 CD	Yes	Low	Low	Negligible
14165	T6N,R27E, SEC 15 CB	Yes	Moderate	Moderate	Potential to Become Major
14255	T6N,R27E, SEC 16 AC	Yes	Moderate	Major	Major
14325	T6N,R27E, SEC 17 AA	Yes	Moderate	Major	Major
14415	T6N,R27E, SEC 8 DC	Yes	Moderate	Moderate	Potential to Become Major
14535	T6N,R27E, SEC 8 CA	Yes	Moderate	Negligible	Negligible
14555	T6N,R27E, SEC 8 CA	Yes	Moderate	Low	Negligible
14655	T6N,R27E, SEC 8 BB	No	None		
14755	T6N,R27E, SEC 6 DC	No	None		
14785	T6N,R27E, SEC 7 AC	No	None		
16135	T6N,R27E, SEC 22 CB	Yes	Low	Low	Negligible
16145	T6N,R27E, SEC 21 DA	Yes	Moderate	Low	Negligible
16165	T6N,R27E, SEC 21 AD	Yes	Moderate	Moderate	Potential to Become Major
16255	T6N,R27E, SEC 21 AC	Yes	Moderate	Low	Negligible
16275	T6N,R27E, SEC 21 AC	Yes	Moderate	Low	Negligible
16355	T6N,R27E, SEC 21 BA	Yes	Moderate	Moderate	Potential to Become Major
16365	T6N,R27E, SEC 21 BB	Yes	Moderate	Moderate	Potential to Become Major
16625	T6N,R27E, SEC 17 DB	Yes	Moderate	Low	Negligible
16655	T6N,R27E, SEC 17 AC	Yes	Moderate	Major	Major
16755	T6N,R27E, SEC 17 AB	Yes	High	Low	Potential to Become Major
16855	T6N,R27E, SEC 17 BB	Yes	Moderate	Negligible	Negligible
16955	T6N,R27E, SEC 18 AA	Yes	High	Low	Negligible
17115	T6N,R27E, SEC 33 BA	No	None		
17145	T6N,R27E, SEC 28 CD	No	None		
17165	T6N,R27E, SEC 28 CB	No	None		
17185	T6N,R27E, SEC 29 AD	No	None		
17215	T6N,R27E, SEC 28 AC	No	None		
17255	T6N,R27E, SEC 28 BC	No	None		
17275	T6N,R27E, SEC 29 AA	No	None		

TABLE E-8 (Continued)

Spring	Location[1] (TRS¼¼)	Within Life-of-Mine Area	Potential for Impact	Relative Importance of Potentially-Impacted Springs[2]	Severity of Impact Prior to Mitigation
17315	T6N,R27E, SEC 20 DC	No	None		
17415	T6N,R27E, SEC 20 BC	Yes	Low	Major	Potential to Become Major
17515	T6N,R27E, SEC 17 CC	Yes	High	Moderate	Major
17635	T6N,R27E, SEC 21 BD	Yes	Moderate	Low	Negligible
17655	T6N,R27E, SEC 21 BC	Yes	Moderate	Low	Negligible
17685	T6N,R27E, SEC 20 AA	Yes	Low	Moderate	
31555	T7N,R27E, SEC 18 BC	No	None		
41125	T6N,R27E, SEC 6 BA	No	None		
41135	T7N,R27E, SEC 31 CD	No	None		
41155	T7N,R27E, SEC 31 BC	No	None		
41165	T7N,R27E, SEC 31 AB	No	None		
41175	T7N,R27E, SEC 31 AB	No	None		
41185	T7N,R27E, SEC 31 BA	No	None		
41215	T6N,R27E, SEC 6 BA	No	None		
41225	T7N,R27E, SEC 32 DC	No	None		
41275	T7N,R27E, SEC 31 AA	No	None		
41315	T7N,R27E, SEC 30 DB	No	None		
41335	T7N,R27E, SEC 30 DB	No	None		
41425	T7N,R26E, SEC 25 CD	No	None		
41445	T7N,R26E, SEC 25 DB	No	None		
41545	T7N,R27E, SEC 29 AB	No	None		
41555	T7N,R27E, SEC 20 CD	No	None		
41575	T7N,R27E, SEC 20 CD	No	None		
41585	T7N,R27E, SEC 16 CC	No	None		
41625	T7N,R27E, SEC 28 BC	No	None		
41635	T7N,R27E, SEC 28 BC	No	None		
41665	T7N,R27E, SEC 21 BC	No	None		
41685	T7N,R27E, SEC 16 CA	No	None		
41755	T7N,R27E, SEC 22 BD	No	None		
41825	T7N,R27E, SEC 22 BD	No	None		
41925	T7N,R27E, SEC 14 DB	No	None		
41945	T7N,R27E, SEC 14 CA	No	None		
41985	T7N,R27E, SEC 15 BA	No	None		
51175	T7N,R27E, SEC 26 CC	No	None		
51255	T7N,R27E, SEC 36 DB	No	None		
51445	T7N,R27E, SEC 26 CB	No	None		
51465	T7N,R27E, SEC 26 BD	No	None		
51485	T7N,R27E, SEC 26 AB	No	None		
52125	T6N,R27E, SEC 9 DA	Yes	Moderate	Moderate	Potential to Become Major
52145	T6N,R27E, SEC 9 AD	Yes	Moderate	Low	Negligible
52165	T6N,R27E, SEC 3 CC	Yes	Negligible		
52225	T6N,R27E, SEC 9 BD	Yes	Moderate	Low	Negligible

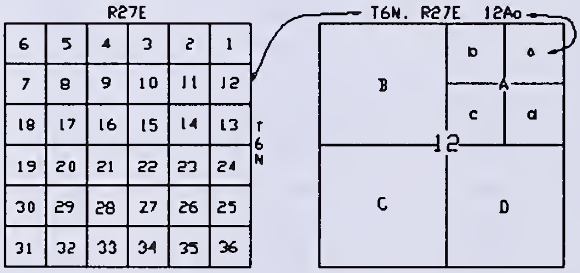
TABLE E-8 (Continued)

Spring	Location[1] (TRS¼¼)	Within Life-of-Mine Area	Potential for Impact	Relative Importance of Potentially-Impacted Springs[2]	Severity of Impact Prior to Mitigation
52235	T6N,R27E, SEC 9 BD	Yes	Moderate	Low	Negligible
52255	T6N,R27E, SEC 9 BB	Yes	Moderate	Negligible	Negligible
52275	T6N,R27E, SEC 4 DD	Yes	Negligible		
52355	T6N,R27E, SEC 4 CA	Yes	None		
52365	T6N,R27E, SEC 4 CA	Yes	None		
52375	T6N,R27E, SEC 4 AC	Yes	None		
52455	T6N,R27E, SEC 3 BC	Yes	Negligible		
52525	T6N,R27E, SEC 5 AB	No	None		
52535	T6N,R27E, SEC 5 AA	No	None		
52545	T7N,R27E, SEC 33 CB	No	None		
52565	T7N,R27E, SEC 33 DC	No	None		
52655	T7N,R27E, SEC 34 CD	No	Negligible		
52855	T7N,R27E, SEC 35 BD	No	None		
53115	T6N,R27E, SEC 15 DC	Yes	Moderate	Low	Negligible
53125	T6N,R27E, SEC 15 DC	Yes	Moderate	Low	Negligible
53145	T6N,R27E, SEC 15 AC	Yes	High	Low	Potential to Become Major
53155	T6N,R27E, SEC 15 AC	Yes	High	Low	Potential to Become Major
53175	T6N,R27E, SEC 15 AA	Yes	Moderate	Moderate	Potential to Become Major
53195	T6N,R27E, SEC 11 CA	No	Negligible	Moderate	Negligible
53225	T6N,R27E, SEC 14 CA	Yes	Moderate	Low	Negligible
53245	T6N,R27E, SEC 14 BD	Yes	High	Low	Potential to Become Major
53285	T6N,R27E, SEC 11 CD	Yes	Negligible		
53325	T6N,R27E, SEC 13 CA	No	None		
53335	T6N,R27E, SEC 13 CB	No	None		
53385	T6N,R27E, SEC 11 DC	No	None		
53415	T6N,R27E, SEC 11 BD	No	None		
53455	T6N,R27E, SEC 11 BA	No	Negligible		
53465	T6N,R27E, SEC 2 CD	No	Negligible		
53475	T6N,R27E, SEC 2 DC	No	Negligible		
53485	T6N,R27E, SEC 2 DC	No	Negligible		
53495	T6N,R27E, SEC 2 DB	No	Negligible		
53525	T6N,R27E, SEC 10 BD	Yes	High	Low	Potential to Become Major
53535	T6N,R27E, SEC 10 BD	Yes	High	Low	Potential to Become Major
53545	T6N,R27E, SEC 10 BD	Yes	Moderate	Low	Potential to Become Major
53575	T6N,R27E, SEC 10 AA	No	None		
53615	T6N,R27E, SEC 13 AC	No	None		
53635	T6N,R27E, SEC 13 BA	No	None		
53685	T6N,R27E, SEC 2 DA	No	None		

TABLE E-8 (Continued)

Spring	Location[1] (TRS¼¼)	Within Life-of-Mine Area	Potential for Impact	Relative Importance of Potentially-Impacted Springs[2]	Severity of Impact Prior to Mitigation
53755	T6N,R27E, SEC 2 BC	No	None		
53855	T7N,R27E, SEC 35 CD	No	None		
71115	T6N,R27E, SEC 22 AB	Yes	Moderate	Low	Negligible
71125	T6N,R27E, SEC 22 BD	Yes	Moderate	Low	Negligible
71355	T6N,R27E, SEC 23 DC	No	None		
71425	T6N,R27E, SEC 24 CC	No	Negligible		
71445	T6N,R27E, SEC 24 CC	No	Negligible		
71465	T6N,R27E, SEC 24 CD	No	Negligible		
72115	T6N,R27E, SEC 27 BB	No	None		
72125	T6N,R27E, SEC 27 BA	No	None		
72135	T6N,R27E, SEC 27 BA	No	None		
72155	T6N,R27E, SEC 27 AC	No	None		
72175	T6N,R27E, SEC 27 DA	No	None		
72185	T6N,R27E, SEC 26 CC	No	None		
92155	T7N,R26E, SEC 25 CB	No	None		

[1] Locations for the springs use USGS designations for 1/4 1/4 sections. This diagram illustrates that for a spring located in the NE corner of Township 6 North (T6N), Range 27 East (R27E), Section 12 (Sec 12) the 1/4 1/4 designation would be "Aa".



[2] For explanation of method used to derive "Relative Importance of Potentially-Impacted Springs" rating see accompanying tables E-3 through E-7, Appendix E.

TABLE E-9
List of Species

Scientific and Common Names of Vegetation Species*

Scientific Name	Common Name
Agropyron cristatum	crested wheatgrass
Agropyron intermedium	intermediate wheatgrass
Agropyron smithii	western wheatgrass
Agropyron spicatum	bluebunch wheatgrass
Artemisia cana	silver sagebrush
Bouteloua gracilis	blue grama
Bromus japonicus	Japanese brome
Bromus tectorum	cheatgrass
Carex filifolia	threadleaf sedge
Carex nebraskensis	Nebraska sedge
Carex spp.	sedge
Centaurea maculosa	spotted knapweed
Cirsium arvense	Canada thistle
Distichlis stricta	inland saltgrass
Hordeum jubatum	foxtail barley
Juncus balticus	wire rush
Juncus bufonis	toad rush
Juniperus scopulorum	Rocky Mountain juniper
Koleria cristata	prairie junegrass
Lactuca serriola	prickly lettuce
Medicago sativa	alfalfa
Pinus ponderosa	ponderosa pine
Poa pratensis	Kentucky bluegrass
Poa sandbergii	sandberg bluegrass
Puccinellia nuttalliana	Nuttall's alkaligrass
Rosa woodsii	woods rose
Sarcobatus vermiculatus	greasewood
Scirpus acutus	western bulrush
Scirpus spp.	bulrush
Stipa comata	needle-and-thread
Stipa viridula	green needlegrass
Suaeda depressa	seepweed
Symphoricarpos albus	snowberry
Symphoricarpos occidentalis	snowberry
Taraxacum officinale	dandelion
Typha latifolia	cattail

* Species mentioned in Chapt. 3

TABLE E-10

List of Species

Common and Scientific Names of Wildlife Species*

Common Name	Scientific Name
MAMMALS	
Nuttall's cottontail	*Sylvilagus nuttalli*
Least chipmunk	*Tamius minimus*
Richardson's ground squirrel	*Spermophilus richardsonii*
Coyote	*Canis latrans*
Rocky Mt.Elk	*Cervus elaphus*
Mule deer	*Odocoileus hemionus*
White-tailed deer	*Odocoileus virginianus*
Pronghorn	*Antilocapra americana*
Blacktail prairie dog	*Cynomys ludovicianus*
BIRDS	
Bald Eagle	*Haliaeetus leucocephalus*
Turkey vulture	*Cathartes aura*
Northern harrier	*Circus cyaneus*
Sharp-shinned hawk	*Accipiter striatus*
Cooper's hawk	*Accipiter cooperii*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
Ferruginous hawk	*Buteo regalis*
Rough-legged hawk	*Buteo lagopus*
American kestrel	*Falco sparvarius*
Prairie falcon	*Falco mexicanus*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Wild turkey	*Meleagris gallopavo*
Great horned owl	*Bubo virginianus*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Downy woodpecker	*Picoides pubescens*
Hairy woodpecker	*Picoides villosus*
Mountain bluebird	*Sialia currocoides*
Cliff swallow	*Hirundo pyrrhonata*

* Species mentioned in Chapter 3.

TABLE E-11.

Birds Observed Along Proposed Railway Corridor Which Were Primarily Associated with Wetlands

Species	Breeding Pairs or Territorial Defense	Broods	Unknown Status
Green-winged teal	X		
Mallard	X	X	
Northern pintail	X		
Blue-winged teal	X		
Cinnamon teal	X		
Northern shoveler	X		
Gadwall	X		
American wigeon	X		
Redhead			X
Lesser scaup	X		
American avocet	X		
Willet		X	
Long-billed curlew	X		
Long-billed dowitcher			X
Wilson's phalarope		X	

TABLE E-12

Employment in Montana, Musselshell County, and Yellowstone County - 1980 and 1989

	Montana				Musselshell County				Yellowstone County			
	1980		1989		1980		1989		1980		1989	
Employment Sector	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Total Employment	389,460	100.0	421,539	100.0	1,944	100.0	1,850	100.0	60,286	100.0	68,964	100.0
Farm	32,870	8.4	31,024	7.4	332	17.1	331	17.9	1,378	2.3	1,311	1.9
Nonfarm	356,590	91.6	390,515	92.6	1,612	82.9	1,519	82.1	58,908	97.7	67,653	98.1
Private	281,449	72.3	312,959	74.2	1,349	69.4	1,276	69.0	51,017	84.6	59,382	86.1
Agricultural Services	3,726	1.0	5,748	1.4	31	1.6	40	2.2	445	0.7	573	0.8
Mining	9,619	2.5	7,005	1.7	278	14.3	116	6.3	783	1.3	589	0.9
Construction	22,324	5.7	20,193	4.8	75	3.9	99	5.4	3,523	5.8	3,205	4.6
Manufacturing	26,225	6.7	24,730	5.9	69	3.5	52	2.8	4,454	7.4	3,359	4.9
Transportation and Utilities	26,194	6.7	23,616	5.6	92	4.7	114	6.2	4,865	8.1	4,667	6.8
Wholesale Trade	18,805	4.8	16,408	3.9	86	4.4	75	4.1	5,827	9.7	5,441	7.9
Retail Trade	68,756	17.7	76,561	18.2	331	17.0	298	16.1	12,231	20.3	14,274	20.7
Finance, Insurance, & Real Estate	22,922	5.9	26,128	6.2	74	3.8	51	2.8	4,414	7.3	5,766	8.4
Services	82,878	21.3	112,570	26.7	313	16.1	431	23.3	14,475	24.0	21,508	31.2
Government	75,141	19.3	77,556	18.4	263	13.5	243	13.1	7,891	13.1	8,271	12.0
Federal (civilian)	13,967	3.6	13,797	3.3	19	1.0	21	1.1	1,636	2.7	1,805	2.6
Federal (military)	9,256	2.4	9,562	2.3	26	1.3	26	1.4	679	1.1	745	1.1
State and Local	51,918	13.3	54,197	12.9	218	11.2	196	10.6	5,576	9.2	5,721	8.3

Source: U.S. Department of Commerce 1991.

TABLE E-13

Labor Force Statistics - Montana, Musselshell County, and Yellowstone County (Selected Years, 1970-1990)

Place/Category	1970	1980	1985	1986	1987	1988	1989	1990
Montana								
Civilian Labor Force	273,000	371,000	405,000	407,000	403,000	402,000	405,000	402,000
Employed Persons	261,000	348,000	374,000	374,000	373,000	374,000	381,000	379,000
Unemployed Persons	12,000	23,000	31,000	33,000	30,000	28,000	24,000	23,000
Unemployment Rate	4.4	6.2	7.7	8.1	7.4	7.0	5.9	5.7
Musselshell County								
Civilian Labor Force	1,440	1,841	1,984	1,961	1,883	1,865	1,782	1,696
Employed Persons	1,333	1,798	1,838	1,754	1,693	1,695	1,648	1,564
Unemployed Persons	107	43	146	207	190	170	134	132
Unemployment Rate	7.4	2.3	7.4	10.6	10.1	9.1	7.5	7.8
Yellowstone County								
Civilian Labor Force	35,170	55,542	61,749	61,423	60,043	59,518	61,870	64,473
Employed Persons	32,966	52,861	57,259	56,718	55,726	55,648	58,704	61,395
Unemployed Persons	2,204	2,681	4,490	4,705	4,317	3,870	3,166	3,078
Unemployment Rate	6.3	4.8	7.3	7.7	7.2	6.5	5.1	4.8

Source: Montana Department of Labor and Industry 1991.

TABLE E-14

Personal Income in Montana, Musselshell County, and Yellowstone County - 1980 and 1989
($000,000)

	Montana				Musselshell County				Yellowstone County			
	1980		1989		1980		1989		1980		1989	
Earnings Sector	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Total Personal Income	$7,039.6	100.0	$11,392.5	100.0	$42.2	100.0	$58.3	100.0	$1,107.2	100.0	$1,810.8	100.0
Total Earnings	5,070.8	72.0	7,366.8	64.7	23.5	55.6	29.3	50.2	862.4	77.9	1,275.4	70.4
Farm	280.2	4.0	474.4	4.2	1.7	4.1	5.5	9.5	7.0	0.6	25.1	1.4
Nonfarm	4,790.6	68.1	6,892.4	60.5	21.7	51.6	23.8	40.8	855.4	77.3	1,250.2	69.0
Private	3,830.7	54.4	5,373.7	47.2	19.1	45.4	19.7	33.9	751.6	67.9	1,079.0	59.6
Agricultural Services	29.0	0.4	52.7	0.5	0.3	0.6	0.6	1.0	4.3	0.4	6.3	0.3
Mining	240.4	3.4	247.7	2.2	6.5	15.3	2.6	4.5	16.6	1.5	17.6	1.0
Construction	445.9	6.3	405.2	3.6	1.1	2.6	1.4	2.3	74.9	6.8	67.1	3.7
Manufacturing	504.3	7.2	619.3	5.4	0.3	0.8	0.3	0.6	93.3	8.4	98.7	5.5
Transportation and Utilities	565.0	8.0	720.2	6.3	2.1	4.9	5.1	8.8	106.2	9.6	134.8	7.4
Wholesale Trade	337.6	4.8	386.5	3.4	2.2	5.2	1.5	2.5	114.3	10.3	143.7	7.9
Retail Trade	613.1	8.7	850.0	7.5	2.5	5.8	2.8	4.7	116.0	10.5	166.8	9.2
Finance, Insurance, & Real Estate	217.7	3.1	313.7	2.8	0.9	2.2	0.7	1.1	42.9	3.9	77.7	4.3
Services	877.7	12.5	1,778.5	15.6	3.4	8.1	4.8	8.2	183.1	16.5	366.3	20.2
Government	960.0	13.6	1,518.7	13.3	2.6	6.2	4.0	6.9	103.8	9.4	171.2	9.5
Federal (civilian)	257.7	3.7	394.2	3.5	0.3	0.7	0.6	1.0	33.6	3.0	59.5	3.3
Federal (military)	74.8	1.1	133.1	1.2	0.1	0.2	0.2	0.3	2.3	0.2	5.2	0.3
State and Local	627.4	8.9	991.4	8.7	2.2	5.3	3.3	5.6	68.0	6.1	106.6	5.9

Source: U.S. Department of Commerce May 1991.

TABLE E-15

Population by Age - Bull Mountains Study Area

Place/Age	1970	Percent of Total	1980	Percent of Total	1990	Percent of Total
Montana Total	694,409	100.0	786,690	100.0	799,065	100.0
0 to 4 Years	57,054	8.2	64,455	8.2	59,257	7.4
5 to 17 Years	196,071	28.2	167,440	21.3	162,847	20.4
18 to 64 Years	372,548	53.6	470,236	59.8	470,464	58.9
65+ Years	68,736	9.9	84,559	10.7	106,497	13.3
Musselshell Co. Total	3,734	100.0	4,428	100.0	4,106	100.0
0 to 4 Years	273	7.3	376	8.5	199	4.8
5 to 17 Years	934	25.0	937	21.2	844	20.6
18 to 64 Years	1,919	51.4	2,419	54.6	2,242	54.6
65+ Years	608	16.3	696	15.7	821	20.0
Roundup Total	1,564	100.0	2,116	100.0	1,808	100.0
0 to 4 Years	N/A	0.0	186	8.8	100	5.5
5 to 17 Years	N/A	0.0	343	16.2	357	19.7
18 to 64 Years	N/A	0.0	1,129	53.4	884	48.9
65+ Years	N/A	0.0	458	21.6	467	25.8
Yellowstone Co. Total	87,367	100.0	108,035	100.0	113,419	100.0
0 to 4 Years	7,068	8.1	9,013	8.3	8,418	7.4
5 to 17 Years	24,701	28.3	22,665	21.0	22,455	19.8
18 to 64 Years	48,534	55.6	66,516	61.6	68,547	60.4
65+ Years	7,064	8.1	9,841	9.1	13,999	12.3
Billings Total	61,581	100.0	66,842	100.0	81,151	100.0
0 to 4 Years	4,790	7.8	4,907	7.3	6,036	7.4
5 to 17 Years	16,928	27.5	12,606	18.9	14,785	18.2
18 to 64 Years	34,758	56.4	42,603	63.7	48,977	60.4
65+ Years	5,105	8.3	6,726	10.1	11,353	14.0

Note: N/A = Not Available

Source: U.S. Department of Commerce 1970, 1980, and 1990.

TABLE E-16

Baseline Economic Projections for Montana, Musselshell County, and Yellowstone County - 1990 to 2010

Place/Type	1990	1995	2000	2005	2010
Montana					
Population	799,065	824,591	849,782	873,195	897,738
Employment	426,923	454,890	483,126	506,978	523,272
Per Capita Income	$11,609	$13,101	$14,801	$16,692	$18,752
Musselshell County					
Population	4,106	4,238	4,389	4,436	4,615
Employment	1,858	1,897	1,955	2,013	2,052
Per Capita Income	$10,828	$12,143	$13,683	$15,422	$17,341
Yellowstone County					
Population	113,419	119,928	125,489	130,309	134,968
Employment	70,279	77,242	83,688	89,110	92,981
Per Capita Income	$12,780	$14,334	$16,139	$18,136	$20,330

Source: National Planning Association Data Services, Inc. 1990.

APPENDIX F

DRAFT EIS COMMENTS AND RESPONSES

1. INTRODUCTION

Appendix F has been printed on shaded paper to distinguish comments and responses for the Draft EIS from the remainder of the document.

The draft Environmental Impact Statement (EIS) for Meridian Minerals Company's proposed Bull Mountains Mine No. 1 was published and released for public review on August 31, 1992. Notices of publication and of public meetings on the draft were published in the Billings Gazette September 9, 19, and 25, 1992, and in the Roundup Record - Tribune September 9, 16, and 23, 1992.

In this appendix, Montana DSL (the Agency) responds to substantive comments received on the draft EIS. Substantive comments are those that question analyses or procedural steps. Statements of support or objection to the proposed Project, and other personal opinions, such as the necessity of boosting the local economy, are hereby acknowledged and are reproduced as oral or written testimony in Section 3. However, the Agency cannot respond to these comments.

Public meetings were held in Huntley, Montana, on September 22, 1992, in Billings, Montana, on September 23, 1992, and in Roundup, Montana, on September 24, 1992 to receive comments on the draft EIS. Transcripts of oral testimony from these meetings are included in Section 3. of this appendix. Comments at these meetings focused on concerns about transportation, surface and ground water, socioeconomics, noise, air quality, and reclamation.

Eighty-four letters were received on the draft. An index follows that lists letters and testimony in order of receipt, the commentor by name, commentor's affiliation, impact topics, and page numbers for each letter/oral testimony and response. Each comment has been assigned a number corresponding to the letter received, or to the town in which oral testimony was received, followed by a comment number (e.g., Letter 1, fourth comment would be comment 1-4; oral testimony in Roundup, fourth comment would be R-4). Responses to these comments are presented in Section 4. Where no substantive comment was made, no response was given. Comment numbers were assigned to oral testimony only where substantive comments were made.

Revisions, deletions, and additions to the text of the draft EIS have been made to address concerns where appropriate.

2. INDEX FOR COMMENTS AND RESPONSES

LETTER NUMBER	AUTHOR	AFFILIATION	TOPIC	PAGE # - LETTER	PAGE # - RESPONSE
1	Dale R. Harms State Supervisor	U.S. Fish & Wildlife Service	Wildlife	F-15	
2	Max Long Executive Director	Roundup Memorial Hospital	Socioeconomics	F-15	F-81
3	Steven M. Erb President	Huntley Community Club	General (Duplicate of Letter #39)	F-15	F-81
4	John Scott State Representative	Montana House of Representatives	General Socioeconomics Transportation	F-16	F-81
5		Fergus Electrical Cooperative	Socioeconomics Noise General Air Quality Transportation	F-16	F-81
6	Nicol Price	Huntley Community Club	Socioeconomics Noise General Air Quality Transportation	F-17	F-81
7	Ellen Pfister		Transportation Socioeconomics General	F-18	F-83
8	Don Golder		General	F-19	F-84
9	Jerry Thomas Executive Director	Montana Tradeport Authority	Socioeconomics	F-20	F-84
10	Nicol Price		General Socioeconomics Visual	F-20	F-84
11	J. Jay Erdie District Superintendent	Roundup Public Schools	Transportation	F-21	F-85
12	M.D. Brewer County Commissioner	Musselshell County	Transportation	F-21	F-85

LETTER NUMBER	AUTHOR	AFFILIATION	TOPIC	PAGE # - LETTER	PAGE # - RESPONSE
13	Monica J. Lindeen	Huntley Community Club	Transportation General	F-21	F-85
14	Monica Lindeen	Huntley Water District	Hydrology Land Use Transportation General	F-22	F-86
15	Cheri Kilby		Support	F-23	
16	Mike Kilby		Support	F-24	
17	Roberta Snider		Support	F-24	
18	Steven M. Erb		Land Use General Socioeconomics Transportation	F-24	F-86
19	Karla Snider		Support	F-27	
20	Richard D. Snider		Support	F-27	
21	Bruce J. Hoiland	Hoiland Ford, Inc.	Socioeconomics	F-27	F-86
22	Steve and Jeanne Charter		Hydrology General Geology	F-28	F-86
23	Hershel M. Robbins		Support	F-28	
24	Larry Lekse President	Musselshell Valley Chamber of Commerce	Socioeconomics	F-28	F-87
25	Pete Tully	Northern Plains Resource Council/Bull Mountains Landowners Association	Hydrology General Transportation Geology	F-29	F-87
26	Kelly Gebhardt County Commissioner	Musselshell County	Support	F-30	
27	G. Paul Smith County Sheriff	Musselshell County	Socioeconomics	F-30	F-88

LETTER NUMBER	AUTHOR	AFFILIATION	TOPIC	PAGE # - LETTER	PAGE # - RESPONSE
28	Sally J. Armstrong Mayor	City of Roundup	Socioeconomics	F-31	F-88
29	J. Jay Erdie	Roundup Public Schools	Socioeconomics	F-31	F-88
30	Alvin E. Mills		Support	F-31	
31	Don Golder		General	F-31	F-88
32	Don Golder		Hydrology General	F-32	F-88
33	Ellen Pfister		General	F-32	F-88
34	Diana L. Vanek	State Historic Preservation Office	Cultural	F-33	F-88
35	Murdo A. Campbell Administrative Officer	Montana Department of Commerce	General	F-33	
36	James A. Ziegler, Sr. Mike Matthew, and H. Elwood English County Commissioners	Yellowstone County	Socioeconomics	F-33	F-90
37	Douglas Richardson		Support	F-34	
38	Charles and Barbara Cropp		Air Quality Hydrology Wildlife Transportation General	F-34	F-90
39	Steven M. Erb President	Huntley Community Club	General (Duplicate of Letter #3)	F-35	F-90
40	Robert Knickerbocker President	Huntley Water and Sewer District	Socioeconomics General Transportation Hydrology	F-35	F-91
41	Robert E. Ochsner	Meridian Minerals Company	General	F-36	F-91

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42	James V. Pope		Noise Air Quality General Transportation	F-36	F-91
43	Larry Klinger		Hydrology	F-37	F-92
44	George and Eleanor Carlson		Support	F-37	F-92
45	Johanna Soennichsen		Support	F-38	
46	Al Landwehr		Support	F-38	
47	Ellen J. Lee Clerk/Treasurer	City of Roundup	Socioeconomics	F-39	F-92
48	Alan D. Evans Chairman	Musselshell County Republican Central Committee	Support	F-39	
49	Ray Bernsten Acting Suprvisor	Montana Department of Fish, Wildlife and Parks	General Wildlife Vegetation Recreation Socioeconomics	F-39	F-92
50	Dennis Johnson		Support	F-40	
51	Ed Kirby Weed Supervisor	Yellowstone County Surveyors Office	Vegetation	F-40	F-93
52	Alan Olson		Support	F-41	
53	Mary F. Brower		Support	F-41	F-94
54	543 Petitioners		Support	F-42	
55	Abe Horpestad	State of Montana, Department of Health and Environmental Sciences, Water Quality Bureau	Hydrology	F-42	F-94

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56	Francis R. Cherry, Jr. Associate State Director	U.S. Department of the Interior, Bureau of Land Management	General Hydrology Vegetation Wildlife	F-43	F-95
57	Don W. Cromer Supervisor	Montana Department of Transportation	Transportation	F-43	F-97
58	Nicol Price		General	F-44	F-97
59	Kimberly Mueller		General	F-47	F-97
60	Nicol Price Coordinator	Medicine Wheel Alliance/Associated with Northern Cheyenne Cultural Commission	Cultural	F-48	F-98
60A	Nicol Price Coordinator	Medicine Wheel Alliance/Associated with Northern Cheyenne Cultural Commission	Cultural	F-48	
61	Howard E. Zahller		Air Quality General	F-49	F-98
62	Donna Marsh		Support	F-49	
63	Chalentz A. McKown and 10 Petitioners		Transportation	F-49	F-98
64	Dale Marsh		Support	F-50	
65	JoAnn E. Mills		Support	F-50	
66	Talmadge Gee		General	F-50	F-98
67	Beverly Meged		Support	F-51	
68	Steve and Jeanne Charter		General Geology Hydrology	F-51	F-98
69	Steven M. Erb President	Huntley Community Club	General Transportation Socioeconomics	F-56	F-100

LETTER NUMBER	AUTHOR	AFFILIATION	TOPIC	PAGE # - LETTER	PAGE # - RESPONSE
70	Pete and Rhonda Tully		Hydrology General Wildlife	F-56	F-100
71	Donald E. Picchioni President	Musselshell Valley Development Corporation	Support	F-58	
72	R. Dennis Olson	Northern Plains Resource Council	General Air Quality Geology Hydrology	F-58	F-102
73	Wilbur Wood		Hydrology General Geology Transportation	F-59	F-103
74	David K. Zinke and David P. Becker	Washington Contractors Group, Inc.	Support	F-59	
75	Nick Janich		General Transportation	F-60	F-103
76	T.J. Mueller		Transportation General	F-60	F-104
77	Terry M. Holzer General Manager	Yellowstone Valley Electric Cooperative, Inc.	Support	F-61	
78	Ellen Pfister	Bull Mountain Landowners Association	General Geology Hydrology Recreation Wildlife Vegetation	F-61	F-104
79	Don Golder		General	F-68	F-109
80	Ella Dugan-Laemmle		General Socioeconomics Transportation	F-69	F-109
81	Elizabeth Woodson		General Transportation	F-71	F-109

LETTER NUMBER	AUTHOR	AFFILIATION	TOPIC	PAGE # - LETTER	PAGE # - RESPONSE
82	Monty L. Sealey Executive Director	Central Montana Resource Conservation and Development Area	Support	F-71	
83	Jackie Stearns		General Socioeconomic Transportation Hydrology Air Quality	F-71	F-109
84	Greg Pope		Opposition	F-73	

ORAL TESTIMONY NUMBERS	SPEAKER	AFFILIATION	TOPIC	PAGE # TESTIMONY	PAGE # RESPONSE
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	Monica Lundeen		See Letter 13	F-74	
H-1 through H-14	Jackie Stearns		Air Quality Hydrology Transportation Socioeconomics General	F-74	F-112
	Steven Erb President	Huntley Community Club	See Letter 18	F-74	
	Nicol Price Coordinator	Medicine Wheel Alliance	See Letter 6	F-74	
	Roger McGraw		Transportation Socioeconomics	F-74	
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H-15 through H-22	Ellen Pfister		Transportation Socioeconomics General	F-74	F-113
H-23 through H-27	Don Golder		Transportation General	F-75	F-113
H-28, H-29	Esther Bengston Senator	Montana State Senate	Transportation General	F-75	F-113
H-30 through H-33	Greg Pope		Socioeconomics Wildlife	F-75	F-113
	Gary Amestoy	Montana Department of State Lands	General	F-75	
	Al Evans		See Letter 5	F-75	
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H-64	Jim Cunningham		Transportation	F-77	F-115
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H-71	Unidentified Commentor		Transportation	F-77	F-116
H-72	Ella Dugan-Laemmle		General	F-77	F-116
H-73	Bonnie Lovelace	Montana Department of State Lands	General	F-77	F-116
	Monica Lundeen		See Letter 14	F-78	
	M.D. Bewer County Commissioner	Musselshell County	See Letter 12	F-78	
	David Shuler General Manager	Fergus Electric Cooperative	See Letter 5	F-78	
	Don Picchioni President	Musselshell County Development Corporation	See Letter 11 Support	F-78	
B-1	Nicol Price		See Letter 10 Air Quality	F-78	F-116
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B-5 through B-11	Ellen Pfister		Geology Hydrology	F-78	F-116
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B-17	Cal Cumin	Montana Tradeport Authority	Support Socioeconomics	F-79	F-117
	Doug Richardson		See Letter 37	F-79	F-117
B-18, B-19	Kim Mueller		Recreation	F-79	
	Jay Erdie		See Letter 29	F-79	
R-1	Mark Clark		Transportation	F-79	F-117
	Gary Amestoy	Montana Department of State Lands	General	F-79	
	Mark Clark		General	F-79	
	Robert Clark Representative	Montana House of Representatives	Support	F-79	

ORAL TESTIMONY NUMBERS	SPEAKER	AFFILIATION	TOPIC	PAGE # TESTIMONY	PAGE # RESPONSE
	Sally Armstrong Mayor	City of Roundup	See Letter 28	F-79	
	Ken Sanner		Support	F-79	
	Paul Smith Sheriff	Mussellshell County	See Letter 27	F-79	
	Kelly Gebhardt County Commissioner	Musselshell County	See Letter 26	F-79	
	Pete Tully	Northern Plains Resource Council/ Bull Mountains Landowners Association	See Letter 25	F-79	
R-2 through R-4	Sue Olson County Commissioner	Musselshell County	Hydrology Visual Resources/ Esthetics Support	F-79	F-117
R-5 through R-8	Sanford Haugsdal Road Superintendent	Musselshell County	General Transportation Support	F-79	F-117
	Larry Lekse		See Letter 24	F-80	
	Hershel Robbins		See Letter 23	F-80	
	Jeanne Charter		See Letter 22	F-80	
	Larry Deschemaeker Board President	Fergus Electric	See Letter 5	F-80	
R-9	Corky McKown		Air Quality	F-80	F-118
	Don Golder		See Letter 31	F-80	F-118
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	Bruce Hoiland		See Letter 21	F-80	
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R-13	Monty Sealy		Socioeconomics	F-80	F-118
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	Gary Amestoy	Montana Department of State Lands	General	F-80	
R-16 through R-18	Steven Erb	Huntley Community Club	Transportation	F-80	F-118
R-19	Lavonne Rook		Socioeconomics	F-80	F-118

ORAL TESTIMONY NUMBERS	SPEAKER	AFFILIATION	TOPIC	PAGE # TESTIMONY	PAGE # RESPONSE
	Darrel Brewer County Commissioner	Musselshell County	General	F-80	F-118

3. COMMENTS ON THE DRAFT EIS

FISH AND WILDLIFE ENHANCEMENT
FEDERAL BUILDING, US COURTHOUSE
301 S PARK
P O BOX 10023
HELENA MT 59626

FWE-61130-Billings
M.45-(Informal)

September 16, 1992

Mr. Mike Da Silva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

RECEIVED
SEP 17 1992
STATE LANDS

Dear Mr. Da Silva:

The U.S. Fish and Wildlife Service (Service) has reviewed the draft Environmental Impact Statement for Meridian Minerals Company's Bull Mountain Mine No. 1. The Service believes the document adequately assesses impacts of the proposed project on fish and wildlife resources and their habitats, including Federally listed threatened and endangered species.

We appreciate the opportunity to review the draft document.

Sincerely,

John H. Wood
FOR Dale R. Harms
State Supervisor
Montana State Office

cc: ARD, FWE, Denver, CO
Suboffice Coordinator, FWE, Billings, MT

DMC/jf

"Take Pride in America"

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②

ROUNDUP MEMORIAL HOSPITAL
P.O. BOX 627
ROUNDUP, MONTANA 59072
(406) 323-2301

September 21, 1992

RECEIVED
SEP 22 1992
STATE LANDS

Mike Da Silva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. Da Silva:

As a concerned citizen of Roundup and the Bull Mountains and as the Executive Director of Roundup Memorial Hospital and Nursing Home, I feel that I have a responsibility to provide the following comments to you, concerning the DEIS for Meridian Minerals Company Bull Mountain Mine Number One prepared by the Montana Department of State Lands, August 1992.

Although the DEIS does some assessment of the economic impact on Roundup and Musselshell county, it seems to underplay the true importance and impact to the community's economic status. Based on the assumptions provided on page IV-4 Musselshell County would end up with an in-migration of 14 new employees with a total population increase of approximately 43 new residents.

The DEIS, page III-33 states that there has been a decrease in the available labor force and the absence of any new employment opportunities. Page III-34 projects little or no economic expansion for the future.

Health care services within the county is a major source of employment, the hospital and nursing home currently have a payroll of approximately 1.2 million dollars. Recruitment of health care professionals and other professionals into the community has historically been difficult. One of the reasons is that there is no opportunity for employment of the spouse. It is unreasonable to assume that the addition of approximately 300 jobs within the county would not improve the ability to find suitable employment for the spouse of Registered Nurses, Certified Nurse Aides, Medical Technologists and a multitude of other critical professions within the health care field. 2-1

Emergency transport with in the county must be addressed whether Alternative I is approved or not. With the approval of Alternative I increased economic improvement and taxation will occur which will provide the necessary funding to continue to keep this essential resources within our community.

Continued provision of quality health care to the Musselshell County residents must be a goal that is high on the priorities of those interested in the socioeconomic status of the community. Increased economic stability, increased property valuation and availability of an increased labor force will all contribute positively toward this goal.

The approval of this project provides a major opportunity to address the many needs of this community, jobs, tax relief and improved business climate. These are high concerns to all of us with in the county and within the state. I urge you to select Alternative I, and move forward toward a progressive future.

Very truly yours,

Max Long
Max Long
Executive Director

---

③

RECEIVED
SEP 22 1992
STATE LANDS

HUNTLEY COMMUNITY CLUB, HUNTLEY, MT 59037

September 22, 1992

Dennis Casey, Commissioner
Mike DaSilva, Environmental Specialist
MT Dept of State Lands
Capitol Station
Helena, MT 59620

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR MERIDIAN MINERALS COMPANY'S, BULL MOUNTAINS MINE NO. 1 AND HUNTLEY LOAD-OUT FACILITY.

Dear Mr. Casey:

The Huntley Community Club/Environmental Committee would like to request of you a 30-60 day extension on the comment period for this document.

The reasons for this are:

1. We are a local grass roots group whose main concern until 1990 was taking care of the Barkemeyer Park. Since then, Meridian Minerals was allowed by MT Dept of State Lands to use this Community for its temporary load-out facility. Shortly after the load-out was in operation the HCC/EC was formed to address the concerns of the Huntley Community and surrounding area, regarding the load-out.
2. Since the Community of Huntley was not on the original list of communities to even have a scoping meeting planned for it, this Community had to go to the MT Dept of State Lands and request a meeting, which was held after the closing dates to even comment. All ready this Community was being treated as a write off in this project and yet has the most to lose in its quality of life. Because of this meeting and subsequent meetings sponsored by the Huntley Community Club the Draft EIS that was supposed to be out in the Fall of 1991, has now just been released. A WHOLE YEAR LATER! 3-1
3. Since this Community Group does not have the expertise at our disposal, that both Meridian Mines and MT Dept of State Lands does, we wonder WHY we are expected to assess this document in 30 days. We are sharp, but not that sharp!

page 2

4. For these reasons we are requesting an extension of time for us to be able to find the experts that can help us review this document so that our comments will be valid comments and will stand up to an appeal, if needed. We think this is the only fair thing that you Mr. Casey can do to make sure that our Community is just not railroaded into a load-out facility that is only being placed here because Meridian Minerals doesn't want to spend the time nor the money to address another site location and its impacts. To date this group HCC/EC does not feel that the Montana Environmental Protection Act has been adequately addressed.

Sincerely,

Steven M. Erb

Steven M. Erb, Pres.

The Big Sky Country

(4)

MONTANA HOUSE OF REPRESENTATIVES

REPRESENTATIVE JOHN F. SCOTT
HOUSE DISTRICT 37
HELENA ADDRESS
CAPITOL STATION
HELENA, MONTANA 59620
HOME ADDRESS
PO BOX 58
BALLANTINE, MONTANA 59006

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COMMITTEES:
AGRICULTURE, LIVESTOCK & IRRIGATION
BUSINESS & ECONOMIC DEVELOPMENT
FISH & GAME

September 22, 1992

Montana Department of State Lands
Dennis D. Casey, Commissioner
1625 Eleventh Avenue
Helena, Montana 59620

Dear Dennis:

I am writing to request an extension on the comment period on the draft environmental impact statement on Meridian Minerals Company, Bull Mountain Mine #1. There are four reasons I feel you should grant an extension on the comment period: 4-1

1. Within the draft environmental impact statement proposed actions, there is reference to a Montana land use agreement. Without a copy of this agreement it is impossible to comment at this time. 4-2

2. Public safety does not seem to be an issue within this draft; to merely say potentially increasing the number of accidents or increased exposure between mine related traffic and school buses could increase the chance of an accident is inadequate considering there are five school systems operating buses in the affected area. I firmly believe that it will increase the chance of an accident or fatality. 4-3

3. Ambulance service obviously was not adequately addressed. If it had been, the Worden Ambulance which is the primary first responder service for Huntley and west to Shepherd road would have been mentioned. Shepherd also has a Q.R.U. (Quick Response Unit) serving Highway 312 to Dover Road. 4-4

4. Thirty-five days is not adequate time to address these issues, nor does it give the communities involved the time to research their legal options. 4-5

Dennis, I feel the comment period should be extended to the full sixty days to provide full opportunity to the public to provide substantial oral and/or written comments on the draft EIS to guarantee these and many more issues have been adequately addressed and there are no errors or assumptions. 4-6

Sincerely,

John Scott

John Scott

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(5)

FERGUS ELECTRIC COOPERATIVE INC.

HC 85 BOX 4040 • LEWISTOWN MT 59457-9402 • PHONE (406) 538-3465

MERIDIAN COAL MINE EIS HEARING

Ladies and Gentlemen:

I'm here representing Fergus Electric Cooperative's Board of Directors and wish to speak in support of the Meridian Bull Mountain Mine #1.

Fergus Electric is headquartered in Lewistown, Montana and provides electric service in 13 counties in Central Montana. The Cooperative serves primarily rural farm-ranch operations.

The small communities of Winnett, Grass Range, Roy, Winifred, and Hilger are also part of the system. As with most of the electrical cooperatives in central and eastern Montana, Fergus Electric's density (members per mile of line) is very low and growth is minimal.

Fergus Electric Cooperative will be the power supplier for the Meridian mine that is being developed in the Bull Mountains south of Roundup. The Mine will provide Fergus Electric with an additional 10 to 12 megawatts of energy sales, which will double our system's summer peak. A load of this size and duration lends stability and economic support to the Cooperative. 5-1

The economic development associated with the mine will provide Musselshell and Yellowstone counties, as well as the State, much needed revenue. Opportunities will also be available for the development and growth of satellite businesses associated with the mine.

Due to the loading of rail cars, some residents of Huntley have expressed concern over the truck traffic and associated dust. The Fergus Electric Board appreciates this concern and feels that mitigation efforts could satisfy these problems. Again, this delivery system would only be utilized while the rail link to Broadview is being constructed.

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"OWNED BY THOSE WE SERVE"

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Dennis Casey, Commissioner
Mike OaSilva, Environmental Specialist
Mt. Dept. of State Lands
Capitol Station
Helena, MT 59620

Comments on the Draft EIS for Meridian Minerals Bull Mountains Mine No. 1 and Huntley Load-Out Facility for Public Hearing Sept. 22, 1992.

First off I would like to Thank You for holding a hearing in Huntley, something that was not scheduled during the scoping process. This Community and surrounding area will, according to the Draft EIS be moderately to significant impacted in many negative ways, Coal Hauling on 312E, Coal Hauling down Heath Street, Noise pollution, Dust Pollution, Quality of Life impacts and as far as I could determine, this Community will not receive any of the benefits, including tax dollars. Our Quality of life will be impacted significantly over a three year period OR LONGER, so an industry that evidently must live on a shoe string budget can get on its feet, so to speak. 6-1

I would like to address both the Huntley Load Out Facility and the Noise Pollution from this facility.

Areas that I feel were not adequately addressed in this Draft EIS is the considerable noise pollution that will go along with this operation. We live in a QUIET Community. At night we can hear the trucks going down the Highway. The echo levels in this valley are high, because of the River and how we are situated in the hills. We sleep with our windows open in the spring, summer & fall, an on a very few nights when alot of trains go through at one time, is the only time there is any noise. I request that you stay around after the meeting till the cars are gone and listen to how Quiet it is. 6-2

NOISE POLLUTION

Noise is listed in this document as an unwanted, unpleasant sound. I consider the crashing of railcars a noise, I consider the beeping of equipment when it backs up, noise, I consider trucks gearing down or up, Noise. I consider the augers rumbling, Noise. 6-3

Yet in this document the noise levels for equipment working at

page 2-hearing

the mine. (page IV-39) construction equipment, conveyors, dumping of coal into bins, trucks and rail cars the noise levels would range from 80-85 dBA and acceptable outdoor levels would decrease to 50-55 dBA at 4500 feet from the proposed site. 6-4

Yet on page 111-31 this same document states construction equipment noise levels would have a range of 72 to 95 dBAs and go down to levels of 40 at 4,500 ft.

In figure 111-5 a quiet rural nighttime reading is 25dBAs.

On page 111-33 this document states "noise levels have not been measured in the area of \Huntley but can be approximated from traffic levels on roads. Road traffic I'm sure does not compare to rail traffic or the loading of railroad cars for 16 hrs at a time. Why were not noise studies done? 6-5

I would like to refer again to page 1V-41 and impacts to noise due to construction and operation in Huntley, Quote " during construction period, construction equipment noise levels would range from 55-60 dBA at 1000 ft and decrease to ambient levels at 3000 ft. Noise sources associated with operation of the loadout would include arrival and departure of trucks and trains, operation of a conveyor belts, dumping coal into the dump bin, dozing the pile and loading railroad cars. Noise levels within 100 ft would range from 80 to 85 dBA. Yet noise levels to the nearest residence, 500 ft away would drop to 55-60.

Its interesting that in Huntley, where sound carries the noise levels will drop all those dBAs and yet up at the mine it takes 4500 ft to do the same thing. The Community of Huntley and most housing is within 3000 ft of the load facility planned. 6-6

Montana Dept of State Lands concludes that impacts to Huntley Area from the generation of noise due to the construction and operation of the Huntley Load-Out would be MINOR TO MODERATE OVER THE SHORT TERM, AND NEGLIGIBLE OVER THE LONG TERM. The term here is 3 to 4 years. To this Community there is no short term. This Community and surrounding area will get these levels, whatever they are, 340 days a year, 24 hours a day, and when trains are loaded out every three to four days, a 16 hour crash banging and all other associated noises. THIS IS MINOR? YOU . HAVE GOT TO BE KIDDING. 6-7

page 3-hearing

HUNTLEY LOAD OUT FACILITY

I for one am very disappointed to not see any new base line data on the other 4 proposed sites for the load out facility. It appears to me that the data used is still the same old figures submitted by Meridian Minerals Company in april of 1991. Why has not the Dept of State lands done its own analysis of costs figures for at least four proposed sites. 6-8

To bring the audience up to date on what the Huntley Load-out Facility will be, here are some figures.

A coal stockpile, and 1/8 mile long, 200 ft wide and 25 ft high, (1.1 million tons), a 50-ton hoppered product bin, a medium capacity radial stacker using a 250 ft belt conveyor and flexible chute, a 375 foot reclaim tunnel, and a 25 ft by 100 ft belt conveyor and flexible chute, a mobile trailer for temporary office facilities. an existing 20 ft well to furnish 30,000 gallons of raw water for equipment washdown, service water for machines and dust control, 115 car unit train with 5 engines and a caboose, a waste water pit and a 8 ft high fence.

The Agency concludes that impacts to visual resources/aesthetics in Huntley from the Huntley loadout would be major and significant in the short term.

The analysis that was done by Mike OaSilva in Jan. of 1992 lists the review team as, Bob Ochsner, MM, Mike Oasilva, DSL, Anne Cossitt, GeoResearch. Sites were evaluated based on existing site conditions and facilities, environmental and safety considerations and economic factors. Haul Route consideration were secondary, but costs of route upgrading and haul distances were considered.

I look at this as Human Life to be secondary to economic factors for Meridian Mines. Data used for figures were again the april 1991 correspondence of Meridian Mines.

Huntley is still listed as the most advantageous because it would cost MM only $135,000 to start up. In checking with equipment companies they felt this figure was low, unless they planned to use surplus equipment. The other factor here is what was MM planning to do as far as the load out facility in april of 1991. I do not feel it is what is proposed in the draft EIS to date. 6-9

The only disadvantages listed is its relatively close to the town

page 4

of Huntley and within a quarter mile of a low development subdivision.

Now I would like to have you listen to other site evaluation.

Acton-disadvantages-located within Acton, there could be community impacts from the site. Residence and bar are located with the direction of prevailing winds.

Commanche-disadvantages-there may be some potential impacts on residences.

Broadview-disadvantages-Broadview school and the majority of the town population are located directly opposite tracks and in the prevailing wind direction.

Lavina-disadvantages-due to the proximity of the town, there is potential community impact.

Mossmain-advantages-there is sufficient siding, power and water available, the area is currently disturbed and used for stockpiling, the site is situated so that prevailing winds are not likely to impact residence. estimated cost $330,000. This does have the longest haul route.

Disadvangtages-this site is farthest from the mine (52.1 miles to Huntleys 47.) although almost all is on paved highway and interstate. Operational costs for truck hauling would be greatest at this site.

The Montana Dept of State Lands needs to address alternative sites with a more comprehensive analysis then has taken place here. Its still going along with "WHAT MERIDIAN WANTS! MERIDIAN GETS" and the people of Huntley and surrounding community can just learn to live with it. 6-10

You the Dept of State Lands need to do studies on Wind Direction for the Community of Huntley and NOT USE base line data from Billings. We are different. 6-11

You the Dept of State Lands need to do studies on the Huntley Water Supply and how our city well will be effected by 30,000 gallons of water being pumped when the Community of Huntleys well only produces 18,000, and the law suit that was filed against Huntley on its well and the added cost to the Community water 6-12

page 5

users.

You the Dept of State Lands need to do studies on the Noise Pollution that will ingolf this Community throughout the 3 to 4 year period you are asking us to live with this facility. 6-13

You need to address all traffic that uses not only Heath Street but Northern Ave to the load out facility. I found no assessment of traffic coming from the east going west and a blind corner on beath street and northern ave. 6-14

The Social Impacts and survey done of this community should have been printed in this document along with a list of the people contacted. The survey was used to show that 90% of the people of Huntley were surveyed, but alot of people in the phone book that would be listed under Huntley are not Huntley Proper residents. Therefore your figure of 43% may be incorrect. 6-15

In every since of the word the beet facility in Huntley is only here from Oct to Jan. We don't consider that a big industrial site and truck hauling is maybe for only a month and the trucks for this come and go from the interstate not 312. In this document the industrial site is made to sound like we have both Billings Grain Terminal and Western Sugar right in our backyard.

Therefore, I must add my voice of disapproval to the Montana 5-year permit to mine coal, a disapproval to the Montana Land Use Agreement for the operation of the Bull Mountain Mine No. 1 and its associated support facilities. A disapproval of successive amendments of the Montana permit to mine coal, a Montana coal lease, a federal permit to mine coal and a federal surface use permit for future life-of-mine development.

I also feel that part japanese ownership of this mine needs to be addressed to its consequences to the Montana Coal Industry and what effect this would have on the railroad spur. 6-16

Sincerely,

Nicol Price

Nicol Price
member of the Huntley Community Club/Environmental Committee

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Draft Environmental Impact Statement Comments
Meridian Minerals Bull Mountain Mine No. 1
September 22, 1992
Huntley, Montana
By Ellen Pfister
926 Yale
Billings, Montana 59102

Tonight I would like to talk about the public subsidy to this mine for the transportation during the first three years of mine life, and to once again raise the questions of public safety on some of these roads.

To start with the Northern end of the transportation corridor, Meridian proposes to use the Fattig Road for a mile and a half. Fattig Creek Road is currently as described in the DIES; however, the gravel surface on the road is crushed native sandrock, which would pulverize under the size tractors and trailers they propose to run over it. To haul 35 to 40 tons of coal per load, will require tractor, trailer, and pup combinations of the size that one sees Empire Sand and Gravel put out onto 312--trailer and pup combinations that cost $100,000 per unit. 7-1

Meridian is apparently going to stand the cost of repairing the damage it does to Fattig Creek Road both from its traffic, and future mining activities. DSL should know that more than one house is going into Hidden Spring Subdivision immediately adjoining the mine plan. 7-2 The mile and ahalf of Fattig Creek Road Meridian uses, will need constant maintenance and a better caliber of gravel than is immediately available for a close haul. With the kind of traffic proposed, Meridian could keep one road grader busy on the stretch of road that it uses. Where will the gravel come from, and who will pay for it? 7-3

PM Mine currently has a slightly longer private road which it uses that joins a short length of Fattig Creek Road just before it intersects with Old Divide Road. Why has Meridian decided NOT to use the current mine access road? Using the PM Road would mitigate the impact for a short distance, and put maintenance costs where they truly belong. 7-4

Old Divide Road is a former U.S. Highway, now a Musselshell County Road. It currently has a highly patched paved surface. Within a week after Meridian started hauling coal from the test pit, the stretch from Fattig Creek Road to its Southerly intersection with current U. S. 87 broke up on the loaded hauling lane in whole sections--not just an occasional chuck hole. It reverted to a semi-paved gravel road. It was not satisfactory with the residents along the road. If this Hauling plan is proposed, Musselshell County will probably have to redo the road bed to stand the heavier traffic, in addition to paving it. A serious rebuild, even without shoulders added to the road, could run as high as two hundred thousand dollars a mile. Meridian proposes to use approximately 5 miles of Old Divide Road. Musselshell County could be looking at a million dollars to rebuild the road, or shotguns from the residents if it does not. 7-5

2

The Southerly end of Old Divide intersects U. S. 87 on kind of a downslope. It is a dangerous intersection on snowpacked ice conditions, if the sanders have not yet made it out. 7-6

The addition of shift change traffic coupled with the coal truck traffic should make this an interesting intersection. 7-7

To add to the U. S. 87 mix of traffic is a new subdivision, Cedar Ridge North, beginning at Mile Marker 25 on U. S. 87, and extending South along U. S. 87 about 3 miles, in some cases on both sides of the road. People are apparently buying lots, drilling wells, and moving in. I don't know if the roads within the subdivision are accepted for maintenance by the county. It would be a handy subdivision for potential mine workers. If that became the case, school bus routes would then come further up U. S. 87 from Shepherd, because Cedar Ridge North is in the Shepherd School District. Cedar Ridge North is one of the 20+ acre subdivisions allowed under Montana law. Another one is being planned in Section 25, T 3 N, R 27 E, which would exit from the East on County Line Road to U. S. 87 at mile marker 25. 7-8

What would it cost to build a raised cross walk over US 87 for the school children at Independent School? Increased shift traffic would be coming about the same time as the children, in addition to the constant coal truck traffic. The increased cost to maintain school chilren's safety would be another public subsidy to Meridian. 7-9

312 used to be a US highway like 87. When the Interstate was completed US 312 became simply 312. According to State Senator Esther Bengston, it is an "orphan highway". The Federal Government says it is unnecessary. The State will not hang a Mt.312 sign on it, the way they do on Mt. Highway 3 to Lavina. Yellowstone County can't afford it. They are pulling back from road maintenance expenses any chance they can. Just ask the residents of some subdivisions who thought they had county maintenance on their roads. So we have ten miles of road carrying three times the amount of traffic currently of any other road involved in the transportation corridor. It carries a very high percentage of car and light truck traffic. About the only heavy trucks it carries come from the Empire Sand and Gravel, grain trucks coming off the Interstate at Huntley to Shepherd feedlots, and local haul cattle trucks. 7-10

312 currently has no shoulders on it, and the road be is again beginning to beat out where most wheels meet the road. I have had one breakdown on 312 at evening rush hour, and it is a very scary experience. No one will stop, and there is no shoulder to get out of the line of traffic. According to Senator Bengston, to rebuild a road like 312 with shoulders would cost 275,000 dollars per mile, for which no public entity wishes to stand responsible. The addition of Meridian's coal haul traffic would materially increase the speed of detioration of 312 and substantially decrease the safety of the traveling public. 7-11

The people at the State Highway department may have counted vehicles on 312, but apparently did not observe traffic patterns. To

3

qualify myself as something of an expert on driving 312, in the last 20 years I have made somewhere over 3000 round trips from the ranch to Billings, including 312 from the Shepherd intersection to US 87. I have never had an accident. However, in the last two years my number of near misses have substantially increased, usually due to people turning into businesses on 312 without turn signals or brake lights. 7-12

I am attaching to my testimony a list of businesses and dangerous intersections from Huntley to US 87. They average approximately 4 per mile, which does not include numerous other intersections as well. 312 also carries a good many elderly drivers from the Huntley-Worden area, as well as many young drivers at Shepherd headed for the video store on 312, or coming to or from football games and other activities at the Shepherd school. Adding an increasingly heavy number of coal trucks to this mix is a prescription for some bad accidents to happen.

Does Meridian plan to contract with a trucking firm to haul its coal, or will they be independent contractors? 7-13 Does Meridian plan to insulate itself from the liability affects of hauling its coal over the public rights of way? 7-14

Contracting with gypsy truckers would be the absolute worst for public safety, especially if Meridian is planning on a two hour turn around time per trip. Most of the time such a turn around time will be in their dreams, regardless of who trucks. If the costs which Meridian gave at a public meeting in January 1990 were accurate, only gypsy truckers would sign the contract, because a reputable firm could not pay for its equipment at those prices.

To rebuild 312 to a reasonably safe standard would cost in the vicinity of three million dollars. According to the DEIS, no one agency would admit to having that kind of money available to spend on the project. If the users of 312 can get help from no one else, I would suggest going to the legislature to seek authorization for a toll road--or some form of redistribution of the deisel fuel tax to at least help pay for repairs. Otherwise the public somewhere somehow is going to subsidize Meridian's use of 312. I hope no one pays with his life, for then it becomes a very expensive subsidy indeed.

One final question--if Meridian fails to sell sufficient coal to support building the railroad, will Meridian be permitted to continue on this haul route for an indefinite period of time? The DEIS takes Meridian's plans as a fait accompli, but DSL should remember that "The best laid plans of mice and men often go awry." When DSL deals with public funds and public safety, they should consider that a failure to make sales as planned is a real possiblity. 7-15

List of Businesses and Dangerous Intersections
Highway 312--Yellowstone County, Montana
Huntley to U. S. 87 Intersection
September 22, 1992

1. Mini-storage business
2. Peila Veterinary Clinic
3. Shepherd-312 Intersection
4. Jim's Barber Shop
5. Galaxy Video Shop
6. Countryside Superette and Gas
7. Our Place Cafe
8. Project Meat Service
9. Country Castle Child Care
10. Dog Training Kennel
11. Hideaway Bar, Cafe and Bowling Alley
12 Big Sky Propane
13. Country Gardens
14. Power Suh-station
15. Five-Corners Intersection
16. Quickway--groceries and gas
17. Corral Bar
18. Oil Field Supply
19. Mini-storage (Hager's Old Egg Farm)
20. Green Acres Produce
21. Balaro Speedway
22. Empire Sand and Gravel outlet
23. Big Sky Second Hand
24. Vashler's Frame Shop
25. Kramer-Crowder Horse Ranch
26. Used Car Lot
27. Trader Sannon-used anything
28. 212 Used Cars
29. Ellis Auction Barn
30. Thunder Ridge Kennels
31. O's Insulation and Lumber yard
32. Jubilee Chapel
33. Pyramid Baptist Church
34. Whispering Pines Baptist Church
35. OxBow Subdivision outlet--especially dangerous with left turns
36. OxBow Subdivision outlet
37. Oover Road Intersection--primary exit for Empire Sand and Gravel
38. Magic Mill
39. Zentz Lumber---quite a few bad left turns
40. Intersection with US 87. Intersection designed to funnel traffic into Billings, not designed to funnel heavy truck traffic East. Intersection should be rebuilt and re-signaled.

Northern Plains Resource Council

The Bull Mountain Landowner's Association, an affiliate of the Northern Plains Resource Council (NPRC), feels there are serious problems with the permit application of Bull Mountain Mine No. 1 *as it is currently proposed*. In light of this fact we have developed a list of conditions we feel must be implemented if the mine is to be permitted. These conditions have the full support of NPRC.

MINIMUM REQUIREMENTS FOR PERMITTING THE BULL MOUNTAIN MINE NO. 1

1. Realistic performance bonds and a permanent trust fund to cover the full costs of restoring water resources likely to be disrupted by mine subsidence both on-site and down through tributary drainages.

2. Realistic performance bonds and a permanent trust fund to cover the full costs of stabilizing slopes and controlling subsidence-caused erosion

3. Disapproval of interim coal hauling by truck to Huntley as a threat to public safety. Require coal transportation from the outset to be by conveyor, built down Halfbreed Creek to Roundup and then by a common carrier rail spur built from Roundup along the old Milwaukee right-of-way to the mainline at Cushman.

4. A state-of-the-art covered tipple for the coal loadout.

5. Formal and adequate notice given to interested parties on development and revisions of permit requirements.

Persons interested in adding their support for adoption and enforcement of these mine permit conditions please contact the Montana Department of State Lands, Capital Station, Helena 59620 or the NPRC office at (406) 248-1154.

419 Stapleton Building Billings, MT 59101 (406) 248-1154

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Comments on Meridian Minerals'
Bull Mountain Mine No. 1
Draft Environmental Impact Statement
By Oon C. Golder
P. O. Box 1705
Billings, Montana 59103
Huntley, September 22, 1992

The Meridian Minerals Representative in a taped interview in January 1990 gave a cost of $314,000 to haul 125,000 tons of test pit coal from the proposed mine site to Huntley, equalling a cost of Two Dollars and Fifty-one cents per ton.

125,000 tons delivered to Huntley at 37½ tons per load=3333 trips.

37½ tons per trip @ $2.51 per ton = $94.12 per load divided by 41 miles =$2.29 per loaded mile or $25.00 per hour (2 hour round trip, mine to Huntley).

Cost of driver @ $12.50 per hour leaves $34.56 to maintain truck per hour.

Average fuel consumption @ 4 miles per gallon of deisel x 41 miles = 10 gallons.

10 gallons @ $1.10 per gallon = $11.00, leaving $23.56 per hour.

2. The OEIS projects 45 truck drivers. Figuring on a 40 hour week per driver = 1800 man hours per week. A 2 hour round trip, hauling 40 tons of coal on a set of doubles would result in 900 trips per week to load out three unit trains totaling 36,000 tons per week shipped.

900 trips per week = 150 trips per day on a 6 day work week or 6.25 trips per hour. Maximum capacity at these figure would be 1,872,000 tons shipped annually.

Contracting trucks at $72.00 per hour @ 1800 hours = $129,600 weekly or $6,739,200 annually.

3. 33% of this estimate would approximate 1 train load a week.

33% of freight costs would be 2,223936.00 per year.

14.4 mile haul down Rehder Coulee and on into Roundup on U.S. 87 is 35% of the distance of the Huntley Route. The freight bill per unit train would be 778,377.00, a savings of 1,445,559.00. How much track would that lay on the existing railroad bed from Roundup to Cushman.

4. The use of public roads for coal hauling would be reduced by 75%. The cost of repair, not to speak of rebuilding, to public roads would be likewise reduced. Traffic hazard exposure would probably decrease by 90%, especially when you figure that the majority of traffic and school bus stops is on 312 East from Billings.

5. If Meridian is in earnest about developing the Bull Mountain Mine, their capital expense, their permanent installations would be the construction of a coal silo and train loading facility at Roundup and the laying of railroad track from there West to Cushman on existing right of way. The way it now stands. Meridian has virtually no major capitol investment beyond the mine mouth. This would eliminate the construction of 33 miles of new railroad from the mine mouth to Broadview. At their estimated figures rail line is still costing a million dollars a mile. Those were current figures twenty years ago. 8-1

6. If Meridian's mine does prove successful for them, they then could invest in a conveyor belt or high volume air tunnel to move the coal into Roundup. This is also the direction in which the coal deposit lies. At the end of the life of this mine, the equipment could be removed with virtually no scars on the land. The railroad grade to Broadview would leave a permanent scar.

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September 22, 1992

Mike DeSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DeSilva:

We have reviewed the Draft EIS for Meridian Minerals Company Bull Mountains Mine No. 1, and we are in general consensus with the socio-economic impact findings noted therein.

We do feel, however, that the employment of upwards of 300 people in a basic industry in a rural area of Montana merits more than "minor" impact (Table IV-5). The same can be said for your summary statement (page IV) that under Alternative 2 (denial) there would be only negligible to moderate impacts. The non-creation of approximately 300 primary industry jobs in rural Musselshell and Yellowstone Counties, when the opportunity therefore exists within environmental constraints, needs to be considered a major, negative impact. 9-1

Thank you for the opportunity to provide comment.

Sincerely,

Jerry Thomas
Jerry Thomas
Executive Director

115 North Broadway, Suite 200 • Billings, Montana 59101-2043 • Ph. (406) 256-6873 • FAX (406) 256-6877

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Dennis Casey, Commissioner
Mike Dasilva, Environmental Specialist
MT Dept of State Lands
Capitol Station
Helena, MT 59620

Comments on the Draft EIS for Meridian Minerals Bull Mountains Mine No 1 and Huntley Load-Out Facility for Public Hearing Sept. 23, 1992

I would like to thank State Lands for holding these public hearings and giving all of us a chance to speak. I spoke at the hearing last night in Huntley on Noise Pollution and the Huntley Load Out Site and its non-analysis. Tonight I would like to address the Social and Economic Impacts to Huntley and the Surrounding Area and the Tax and Fiscal Responsibility of this Project. I would also like to add some mitigative measures for this project.

First off, last night we discussed the Regulations that govern an EIS and what that entails. Since I don't have a copy of all the MEPA regs I will use the NEPA regs. Which I'm told are very similar.

I do not feel this EIS follows the regulation set forth in NEPA for these criteria.

1. Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment. 10-1

2. Use all practicable means, to restore and enhance the quality of human environment and avoid or minimize any possible adverse effects of there actions upon the quality of the human environment. 10-2

3. Prepare analytic rather than encyclopedic environmental impact statements. Of which this document is.

Under NEPA 1502.14 (a) It states agencies shall: Rigorously explore and objectively evaluate ALL REASONABLE ALTERNATIVES, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated. 10-3

(c) Include reasonable alternatives.

(e) Identify the agency's perferred alternatives or alternatives if one or more exists.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives. 10-4

None of these have been done for this document. There are no analysis for the other load out sites, including Broadview, Acton, Roundup or Mossmain. A one day trip to look at all these various sites is not rigorously exploring information. There are no alternative routes shown and data to help the public and the Commissioner make a decision. There are no mitigative measures listed in this document for any of the impacts for the Huntley Site or Community. 10-5

In part 1502.14 (a) It states, and EIS shall include discussions of (a) direct effects and their significancs and (b) indirect effects and their significance.

In the area of Social and Economic Impacts to the Huntley Community this is what is written:

A recent survey done in 1991 stated 90% of the respondents were aware of the coal hauling and load out and 43% responded they were affected. It states we value our quiet, rural environment with open spaces, clean air and diversity of wildlife. Thats it! No where do you analysis the Quality of Life, the economic depression to the community, the stress to mental health, the impacts to the elderly who reside here. 10-6

Under Visual Resources/Aesthetics: It states the scenic quality of this area has been substantially impacted by cultural modifications. What does that mean? That we have houses an a elevator? We still have the hills, river and farm ground we think of as special. A huge coal pile does not fit in with this scene. 10-7

In the area of taxation and fiscal responsibility there is very little information but what is there is interesting

Cost to repair road 312 per year $38,654. the diesel fuel tax and GVW will total over a 2.5 yr $378,691. or $151,476. per year.

MM says payroll will be 10 million per year. 10M divided by 300 is $33,000. per year. This is a cheap work force since decker and coal strip pay 35,000 to 65,000 per year.

Taxes paid by MM will be 9M of which musselshell Co will receive 1.2M to the County and $1.7M to the Schools. Yet projections say most people will reside in Billings or surrounding areas.

Billings share of the tax will be $20,000.

Yet in this Draft the cost of just fixing 312 will total 1.3M to 2.0M because of increased maintenance and operations cost. It states that DSL conclude that impacts to the public sector fiscal conditions from mining related impacts would be minor and beneficial. Does not picking up the tab for rebuilding 312 to the tune of 2M seem more than minor? 10-8

I would like to offer some mitigation proposals since none were printed or mentioned in this document.

1. That the Load Out and Stock Pile be totally covered such as the facility at the Absaroka mine on sarpy creek.

2. There be an eight hour work day at this facility and truck hauling and rail car loading be done from 8 to 5 each day; weekends off.

3. There be a small engine used to pull the cars while being loaded.

4. The trucks used for hauling be of a distinct color, have governors on them so speed limits are obeyed and a phone number printed on the truck so if something does happen people could call.

5. A signal light put at the intersection of 87 and 312 junction.

6. The 4% severance tax that would be paid by Meridian be put into a special account ear-marked for the repairs and maintenance of 312. Which would equal $44,000. per year. Which over a three year period would equal $132,000. Not nearly enough for a 2 million dollar repair bill to 312.

7. That Meridian purchase land in the Huntley area out of the housing development to build itself a road to use for hauling instead of Heath Street.

8. That a yearly review team be set up of staff from DSL, MM and the Community of Huntley to review the permit each year and work out problems that may arise. The Huntley Load Out would only be permitted for three years maximum. 10-9

Sincerely
Neil Price
PO Box 37
Huntley, MT 59037

(11)

Roundup Public Schools

MRS. SYLVIA SHELHAMER
District Clerk
Phone 323-1507

School Districts No. 55 and 55-H
P. O. Box 717
Roundup, Montana 59072

AY ERDIE

W. CHERY, Sr.

ETTE PRATT

ARY F. RAY

September 22, 1992

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

RECEIVED
SEP 23 1992
STATE LANDS

Mr. DaSilva

This letter and text focus on the test burn coal hauling that began almost 30 months ago with the route traversing a segment of a school bus route on the southern boundary of Musselshell County, a route serviced by Roundup Public Schools.

During Merdian Minerals test burn coal hauling, beginning January 31, 1990 and concluding on October 12, 1990, a portion of the haul road used by the trucks on their way to Huntley railhead was part and parcel to Roundup Public Schools' most southern bus route, Route 3, which includes all of the Old Divide Road in general but in particular, that portion of the haul road where Old Divide Road intersects with U.S. Highway #87 to the south and PM Coal Road to the north. The time frame (days), spanning nine and one-half months, included two different school years, 56 days in the 89-90 school year and 18 days in the 90-91 school year, consequently, Bus #10 traveled its assigned route 56 and 18 days, respective of the two school years, on a portion of the haul road. 11-1

The window of time that Bus #10 would encounter any haul trucks was 13 minutes in the morning, 7:27-7:40 a.m., and, a like number of minutes in the afternoon, 4:18-4:31 p.m. In this time frame and the 74 school days of hauling, Bus #10 encountered a haul truck approximately five times per week on that portion of the haul road in question. This amounted to approximately 15% of the approximately 1,346 haul trips made during 74 days of school. The long and short of those five "meetings" per week resulted in no abnormal happenings by the haul trucks i.e., no unsafe or imprudent driving incidents, no broken windows, no near misses at bus stops, no equipment failure impeding passage, no congestion of traffic, etc. The impact to the school bus traveling the approximate 3.3 miles, during this time frame, was uneventful.

In conclusion, should the permit be approved, we anticipate similar encounters occurring under the full mine operation.

Sincerely

J. Jay Erdie, District Superintendent
Roundup Public Schools

cc File

ACCREDITED BY THE MONTANA STATE DEPARTMENT OF PUBLIC INSTRUCTION AND THE NORTHWEST ACCREDITING ASSOCIATION

---

(12)

County of Musselshell
ROUNDUP, MONTANA

OF COUNTY COMMISSIONERS
EWER
ILSON
EBNARDT

JANE E. MANG
Clerk & Recorder
MARY C. NELSON
Treasurer
Supt. of Schools
Assessor
G. PAUL SMITH
Sheriff
VICKI KNUDSEN
County Attorney
DONA C. ROBSON
Clerk of District Court
JOHN RAE
Coroner
COLETTE Y. MADISON
Public Administrator
ROBERT E. MIHALOVICH
Justice of the Peace

September 23, 1992

Mr. Miks DaSilva
Environmental Specialist
Montana Dept: of State Lands
Capitol Station
Helena, MT 59620

RECEIVED
SEP 23 1992
STATE LANDS

Dear Mr. DaSilva:

The Musselshell County Commissioners would like to go on record in general agreement with the review and assessment of the impacts to the integrity/stability of county roads as stated in the transportation section of the Bull Mountain Mine No.1 DEIS.

Over the past two years, the Commissioners have had the opportunity to review the twenty odd volumes of mine permitting documentation and tremendous amounts of related correspondence, and have attended numerous public meetings related to this project. We recognize that all this has been considered in reaching conclusions about potential impacts.

We Commissioners have been asked, occasionally at related public meetings, how we intend to address the impacts, particularly to Old Divide Road. While this is beyond the scope of this DEIS, for your information, the Commissioners are assessing the potential damage, based upon test pit hauling, conducting discussions with company officials, and looking at financial options such as Coal Board impact funds and increased tax revenues to deal with the issue. We are confident that our planning efforts will help mitigate the impacts in a reasonable manner. 12-1

Thank you for this opportunity to comment.

Sincerely,

M. D. Brewer, Chairman
Musselshell County Commissioners

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(13)

Bull Mountains Mine No 1-Draft EIS
Public Hearing, Huntley MT 9/22/92
Monica J Lindeen
Huntley Community Club Board Member
Huntley Water District Board Member
Huntley Resident

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STATE LANDS

The Huntley Community Club, and other concerned members of the community, would like to take this opportunity to express our formal position regarding the consideration of Meridian Minerals' proposed coal load-out site in Huntley. The HCC is not opposed to industrial economic growth in the state of Montana. However, we are opposed to growth which would have a decidely destructive effect on the quality of life in the Huntley area, in both human and non-human terms. The impact that the proposed load-out site would have on the quality of life, on both environmental and human terms, would indeed be destructive. Meridian Minerals' proposed coal load-out is just that-a severe impact to human and environmental safety, not only for the residents of Huntley, but for neighboring communities as well.

The HCC feels strongly that Meridian Minerals could choose an alternative load-out site which would dramatically decrease the impact to public safety. An alternative could slightly increase the cost of doing business for Meridian, but we feel that the cost of natural and human life is far more important than the cost of doing business. The conservation of ecology, both natural and social, should take precedence over corporate greed. Corporations continue to complain to government that they can not afford the costs of doing business, but data from government agencies like the Internal Revenue Service prove otherwise. 13-1

Consider, if you will, the total U.S. income taxes collected during the 1950's. The individuals' share totaled 61%, while the corporate share stood at 39%. Then in the 1980's, Regean's "trickle-down" economics came in to play and the numbers changed dramatically. Now, in the 1980's, the individual's share rose to a dramatic 83%, while the corporate share shrunk to just 17%. In other words, taxes paid by corporations increased 264% from the 1950's to the 1980's, and during that same period, tax payments by individuals soared 1,041%. And if you consider that mining has been given nothing but tax breaks in the state of Montana, we say that Meridian can afford a slightly more costly alternative. How long will we continue to allow the "corporate will" to dictate for the public what is best in regards to our own safety and quality of life? We say the time to end this corporate dictatorship is now!

We have played by the rules and standards of the power elite long enough. We were led to believe that if we were only patient, and played an active role in the EIS process, compromises which were satisfactory to both sides could be worked out. Obviously we, the public, were lied to once again. This became evident to us after reading the none to cleverly concocted draft EIS. We find the draft to be vaque, shallow, and unacceptable.

We would also like to take this opportunity to present eight conditions we feel must be implemented if the mine is to be permitted.

1. We would like to see Meridian's transportation route re-routed off of Heath St.
2. We want to see that funds are set aside specifically for maintenance and repair of Highway 312 and any other roads on the route which will be eventually decided on.
3. We want to ensure that the load-out does indeed include the Best Available Controlled Technology (BACT) which Meridian has been promising us from the very beginning.
4. We insist that coal transport be shut down during school bus transportation hours.
5. We would like to see speed limit signs for the trucks posted on haul routes.
6. We want to see drivers bonded or employees of Meridian Minerals.

13-2

7. We demand trailers be tarped, rather than relying on a trailer design which will merely reduce, not eliminate, blowing dust. 13-2
8. We would like to urge DSL to seriously consider and follow the recommendation of the Department of Highways, who also feels that an alternative load-out site should be considered. 13-3

Public Hearing, Billings Mt (9/23/92) (14)
Eastern Montana College

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SEP 23 1992
STATE LANDS

Monica Lindeen

- last night I spoke as a representative for the HCC and other concerned residents of Huntley
- tonight I am speaking in two separate capacities:
  (1) as an elected official for the Huntley Water District
  (2) as a concerned citizen of Huntley who will be extremely effected by the proposed load-out

(1) Huntley Water District

- T. J. Mueller
- Bob Knickerbocker - Pres
- Shirley Sherman

Over the past several months, the Huntley Water District Board has been engaged in putting together engineer's estimates, grants, and other related research in order to begin implementing an extensive project which would upgrade the Huntley Water System.

We are under pressure to upgrade our system in order to continue to comply with federal regulations

As far as we know, we are the only government entity within the townsite of Huntley, and we do have some concerns which we feel have not been addressed.

(1) Why has no one from Meridian or the DSL contacted us? We have not been contacted or advised on how their water use may effect our system? This issue was not properly adressed in the EIS. 14-1

(2) Will Meridians' use of water during operations have any effect (negative) on our plans to upgrade the Huntley Water System. 14-2

Someone from the DSL or Meridian needs to look at our engineer's studys and determine if there will be any negative effects. We have already put a great deal of our consumers $ into this project and we would hate to see it jeopardized for a so-called temporary project. The basic welfare and health of the Huntley community depends on the future success of our upgrade project. 14-2

(2) Concerned Citizen of Huntley

As many of you from Meridian and DSL already know, I live on Heath St, which is part of the immediate proposed route. also My house sits less than 1,000 ft. from the proposed site. I will not subject you to the atrocities which myself and my family were subject to during the test pit operation 2 years ago. I believe I have gone on sufficient record over the past two years.

Instead, I wish to adress items which were either not adressed in the EIS, or not adressed sufficiently.

(1) In more than one instance in the draft EIS, the proposed load-out site in Huntley is referred to as a "previously disturbed industrial area". This is incorrect! The proposed site is a previously disturbed agricultural area. Meridian is using their own test pit operation as 14-3

justification for labeling the area as "industrial." I find this tactic completely unacceptable, and I hope the DSL will clear up this matter in their final statement. No decision should be made based on this false "industrial" claim. **14-3**

(2). Last night we proposed that the transportation route be re-routed off of Heath St. Our reasons being that this is a residential street, with children and bus stops. If, and I say if, Huntley is going to be forced to live with the proposed load-out, we would like to see the access street from ~~the~~ highway 312 to the load-out moved East of Heath St. There is a short cut-over, with no residents, approximately 2-3 blocks east of Heath St. ~~On this cut-over~~

If Meridian were to use this cut-over it would help to reduce possible accidents with school buses and children. It would also help to reduce accidents that would otherwise occur at the blind intersection of Heath St. & Normal Ave which sits directly in front of the proposed load-out. This blind intersection was never addressed in the EIS. **14-4**

(3) An even better idea, which was not addressed in the EIS, involves moving the site to another alternative area. Meridian continually sites the cost of doing business as their reason for choosing the Huntley site. I would like to know how much $ they have allocated for each individual life which will be lost ~~as~~ because of their project. I know they have these figures figured into their cost of doing business — and I would like to see them addressed in the EIS.

Perhaps this $ could be better spent by moving the load-out somewhere where the threat to public safety is drastically reduced.

I want to see the EIS adequately address load-out sites in Roundup, Broadview & Acton. The impact to public health & safety would be dramatically decreased if any "real" serious consideration was given to them. **14-5**

(4) However, if the Huntley area still appears to be the only choice — I propose that the load-out be moved to the Coers site, ~~site only~~ east of Huntley. This site has been previously considered. ~~There seem to~~ According to field notes by the DSL and Meridian themselves, there appear to be only 2 small disadvantages: **14-6**

(1) The site would require an upgrade truck crossing over the tracks, and possible relocation or modification of power lines.
(2) Cost to Meridian would be $755,000 more than at the Huntley site. **14-7**

~~How close does this figure~~

How close is this figure, to Meridian's figure, for a life in the cost of doing business?

One more thing I would like to see the EIS address — who will be held liable if someone is killed on the transportation route? Is there Sovereign Immunity? **14-8**

Sept 24, 1992

(15)

702 2nd Street East
Roundup, Montana 59072

RECEIVED
SEP 24 1992
STATE LANDS

Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Mr. DeSilva

I have attended a number of meetings on the proposed mine permit for the Bull Mountains that Meridian Minerals is applying for. Many of the people attending the meetings have had very strong views in opposition of the mine or strong views in support of the mine. I support the mine permit. But I also can understand the concerns with the water and the traffic and in Huntley with the noise level. Yet, after talking with and reading about the plans Meridian Minerals has for taking care of the problems, I don't feel the concerns I have heard should stop the permit from going through.

This mine will help the economic growth of Musselshell County, it will help the schools and the business trying to survive, and it will help the state of Montana. Already in the area we can see a slight impact on the economy. Many people are waiting in anticipation for the mine to begin operation. Jobs are important, and people want to go to work now. Yet in this county there are no jobs. The oilfields are slow, ranching is slow and so is farming. When these areas are going through tough times so do the businesses and in turn no jobs are available. Trickle down economics definitely apply to the Musselshell County area. Business, farms, ranches, and individuals will all benefit in a healthy way to the opening of the Bull Mountain Mine.

The permit should be granted, and it is my hope that it is granted soon and operation of the mine can begin.

Sincerely

Cheri Kilby

Cheri Kilby

(16)

702 2nd Street East
Roundup, Montana 59072

RECEIVED
SEP 24 1992
STATE LANDS

Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Mr. DeSilva

This letter is to state my support for the proposed mine in the Bull Mountains. I am a life time resident of Musselshell County and consider myself lucky because I have a job with the City of Roundup. My friends and neighbors are not so lucky. Many have had to leave the state in order to find jobs. I feel that the coal mine is vital for the survival of Musselshell County. The numbers that will be employed and the amount of money that will go back into our community is desperately needed.

I feel that Meridian Minerals is a very responsible company and that the state has numerous safeguards that will protect the environment and the interest of the people. These are important factors because of the water and the traffic. These are highly controversial issues; but because of the laws I feel the company will be monitored and any problems corrected immediately if the mine permit is granted.

Please grant the permit to Meridian Minerals. The county needs it and the state needs it; as well as the Company.

Sincerely

Mike Kilby

Mike Kilby

---

(17)

P.O. Box 313
Roundup, Montana 59072

RECEIVED
SEP 24 1992
STATE LANDS

Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Mr. DeSilva

This letter is to voice my support for the proposed Mining operation in the Bull Mountains.

I feel the laws of the land and the watchful eye of the EPA will monitor the mining operation to the extent that few problems will be encountered with the mining operations. I know that good will come for the operation because of the increase in jobs and the increase in property value that will follow the opening of the Mine.

This seems to be a true opportunity for the Musselshell County and for the surrounding towns. The state needs the mining operation. Just looking at the bottom line should tell us that. No state can operate in the red and with the opening of the mine there will be more tax dollars in the state coffers.

I am in full support of the mining operation and I sincerely hope that you will find that Meridian Minerals is an important asset to the state and will grant them the permit to proceed with their operation.

Sincerely

Roberta Snider

Roberta Snider

RECEIVED
SEP 24 1992
STATE LANDS

(18)

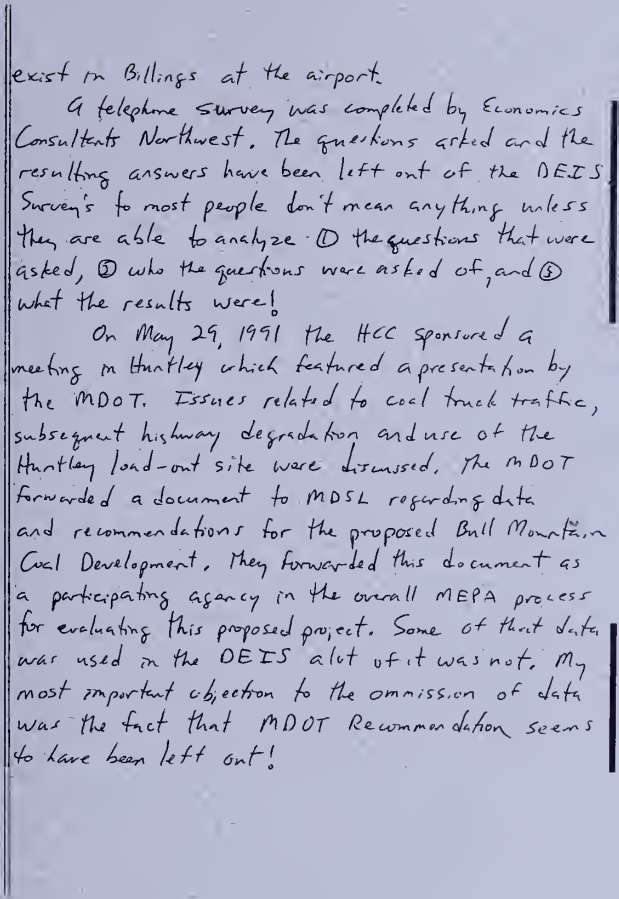
Oral Comments by Steven M. Erb at MDSL Hearing regarding Bull Mountains Mine #1 at Huntley MT.

My name is Steve. I'm representing myself, my family Stacy Ashley + Cameron, and my community. I'm currently serving as President of the Huntley Community Club and as chairman of the Standing committee which was formed to address the concerns of the Huntley Community and the surrounding area, regarding the proposed Huntley load-out. As a representative of myself and my family and the community of Huntley I'm announcing my opposition to the load-out site at Huntley.

Our community is a quiet, clean, out of the way, agricultural community, I stress agricultural community because the load-out site is refered to in the DEIS as an industrial area complete with a sugar beet loading facility, railyard, and grain elevator. This same industrial area happens to have residential areas to the northeast, north, and northwest as close as 500 feet to the load-out. I find it hard to believe that a sugar beet dump, which is used maybe 4 months out of the year, a rail yard consisting of a couple sets of tracks with a few cars on them and a grain elevator constitute an industrial area. I'd also like to point out here that we as a community have come to accept these facilities as an integral part of our community for a couple of reasons: ① these facilities are part of the agricultural backbone of our community and ② in most cases these facilities were here before we were! 18-1

On numerous occassions the DEIS mentions that alternative routes, sites, and methods were analyzed but not ~~and~~ considered due to cost, maintenance, or environmental degradation yet no figures for the aforementioned conditions are offered in the draft EIS. 18-2 The HCC maintains that, while cost, maintenance, and environmental degradation estimates have been used as excuses not to consider alternative routes, sites, and methods; these same estimates apparently are more important than impacts to the human element of our environment which we refer to as our Quality of Life in the community of Huntley.

Meridian Minerals & MDSL have known since the summer of 1990 that two of this communities biggest concerns resulting from the operation of the load-out during the test pit phase were climate, mainly wind direction, and air quality. Yet since that operation ceased in the fall of 1990 no attempt has been made to collect any non-operating baseline data with which to compare operating data. The HC Simply cannot accept that this area has exactly the same winds and air quality conditions that 18-3



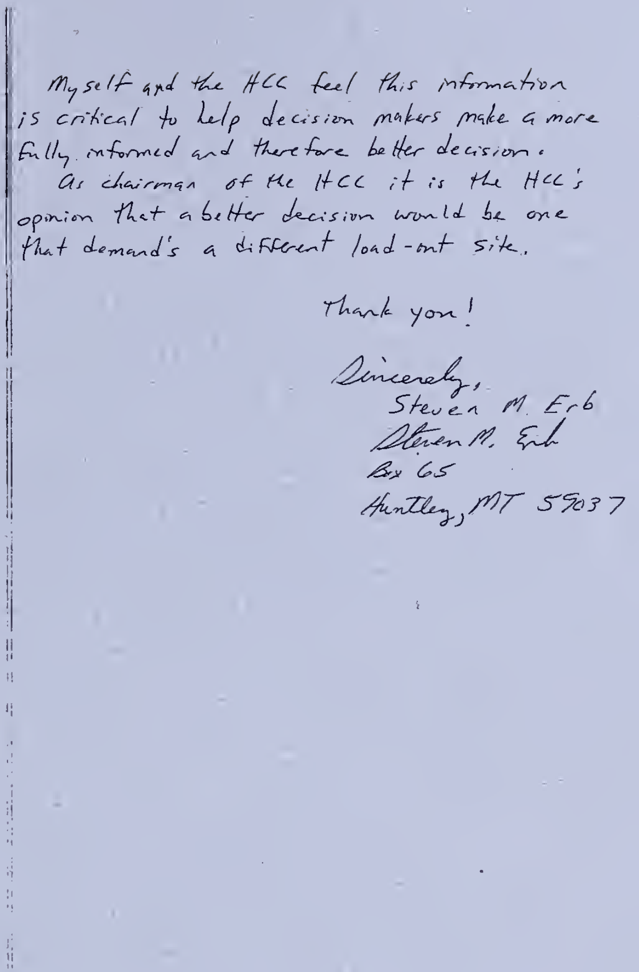
exist in Billings at the airport.

A telephone survey was completed by Economics Consultants Northwest. The questions asked and the resulting answers have been left out of the DEIS. Survey's to most people don't mean anything unless they are able to analyze ① the questions that were asked, ② who the questions were asked of, and ③ what the results were!

18-4

On May 29, 1991 the HCC sponsored a meeting in Huntley which featured a presentation by the MDOT. Issues related to coal truck traffic, subsequent highway degradation and use of the Huntley load-out site were discussed. The MDOT forwarded a document to MDSL regarding data and recommendations for the proposed Bull Mountain Coal Development. They forwarded this document as a participating agency in the overall MEPA process for evaluating this proposed project. Some of that data was used in the DEIS a lot of it was not. My most important objection to the omission of data was the fact that MDOT Recommendation seems to have been left out!

18-5

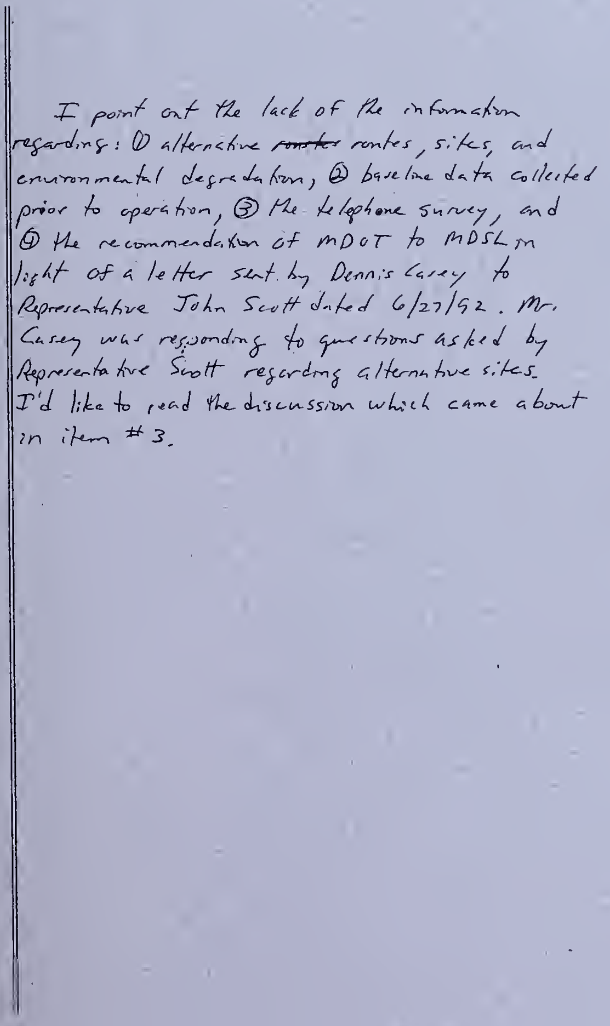


Myself and the HCC feel this information is critical to help decision makers make a more fully informed and therefore better decision.

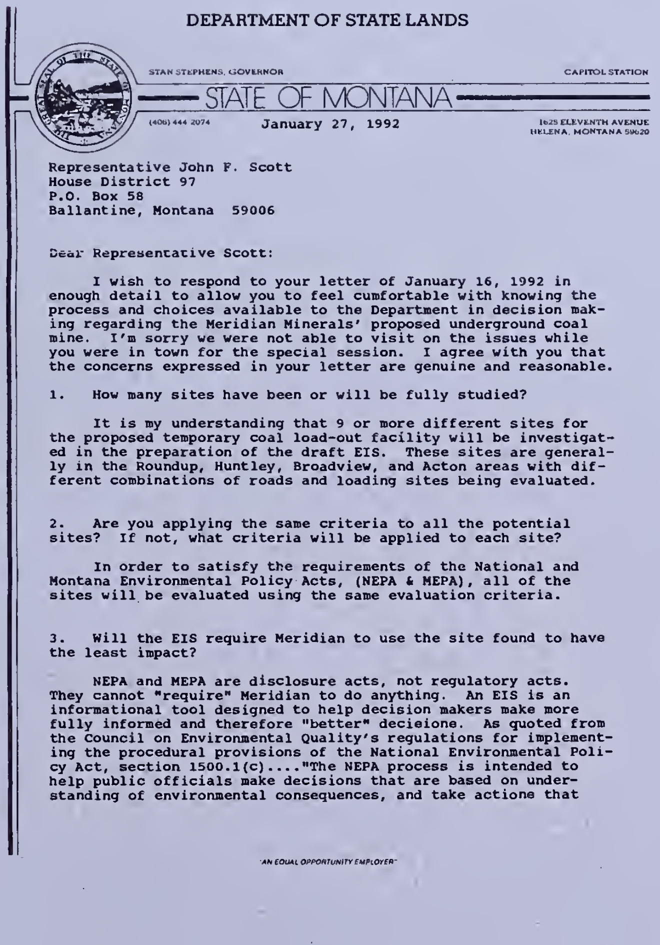
As chairman of the HCC it is the HCC's opinion that a better decision would be one that demand's a different load-out site.

Thank you!

Sincerely,
Steven M. Erb
Steven M. Erb
Box 65
Huntley, MT 59037



I point out the lack of the information regarding: ① alternative ~~routes~~ routes, sites, and environmental degradation, ② baseline data collected prior to operation, ③ the telephone survey, and ④ the recommendation of MDOT to MDSL in light of a letter sent by Dennis Casey to Representative John Scott dated 6/27/92. Mr. Casey was responding to questions asked by Representative Scott regarding alternative sites. I'd like to read the discussion which came about in item #3.



DEPARTMENT OF STATE LANDS

STAN STEPHENS, GOVERNOR
CAPITOL STATION
STATE OF MONTANA
(406) 444 2074
1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

January 27, 1992

Representative John F. Scott
House District 97
P.O. Box 58
Ballantine, Montana 59006

Dear Representative Scott:

I wish to respond to your letter of January 16, 1992 in enough detail to allow you to feel comfortable with knowing the process and choices available to the Department in decision making regarding the Meridian Minerals' proposed underground coal mine. I'm sorry we were not able to visit on the issues while you were in town for the special session. I agree with you that the concerns expressed in your letter are genuine and reasonable.

1. How many sites have been or will be fully studied?

It is my understanding that 9 or more different sites for the proposed temporary coal load-out facility will be investigated in the preparation of the draft EIS. These sites are generally in the Roundup, Huntley, Broadview, and Acton areas with different combinations of roads and loading sites being evaluated.

2. Are you applying the same criteria to all the potential sites? If not, what criteria will be applied to each site?

In order to satisfy the requirements of the National and Montana Environmental Policy Acts, (NEPA & MEPA), all of the sites will be evaluated using the same evaluation criteria.

3. Will the EIS require Meridian to use the site found to have the least impact?

NEPA and MEPA are disclosure acts, not regulatory acts. They cannot "require" Meridian to do anything. An EIS is an informational tool designed to help decision makers make more fully informed and therefore "better" decisions. As quoted from the Council on Environmental Quality's regulations for implementing the procedural provisions of the National Environmental Policy Act, section 1500.1(c)...."The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that

"AN EQUAL OPPORTUNITY EMPLOYER"

protect, restore and enhance the environment." Montana's statute is fundamentally no different.

My choices for permitting are:

1. approval of the proposal once deemed technically adequate in accordance with the coal statute;
2. approval as above with special conditions at that site and in accordance with the coal statute; or
3. denial of the proposal.

Denial of the proposal would leave Meridian with the need to seek another loadout site which is permittable under the provisions of the coal statute. Of course, in this scenario all applicable provisions of the coal statute would have to be met including one year of baseline data collection in all of the scientific disciplines, a new application for the site, a new environmental analysis document, new written findings, and new public involvement opportunities.

4. Will this study assess the cumulative impacts of the total Meridian project?

The draft EIS will assess more than just the cumulative impacts of the Meridian project. As required by NEPA and MEPA, the draft EIS will address the cumulative impacts of all other known projects in the area which may, along with the Meridian project, collectively impact the human environment.

5. Will Meridian be required to provide a bond that cen be used to immediately mitigate against any potential impacts?

No. Meridian will come under the same bonding requirements as all other coal mining companies. The department is limited in its ability to require bonds. We can only demand a bond for reclamation under the Montana Strip and Underground Mine Reclamation Act, 82-4-223, MCA.

I hope I have satisfactorily answered your questions. If you need more information, feel free to contact me at any time.

Sincerely,

Dennis D. Casey, Commissioner
Department of State Lands

/ns

cc. Bonnie Lovelace

RECOMMENDATIONS

The MDT has no legal authority to regulate who can or cannot use those routes open to traffic by the general public. The only legal authority that we have is through Gross Vehicle Weight permits where we can regulete the size and weight of a truck and through encroachment permits or standard R/W 20 forms. As stewards of public transportation, we can only advise of where there could be potential impacts and make the appropriate recommendations.

Because of projected increased maintenance costs, projected decreased pavement life, projected decrease in available funds, anticipeted decrease in level-of-service and en anticipated increase in the accidents for the component route segments; the MDT would prefer that Meridian Minerals would pursue other load out sites such as Acton or Broadview rather than Huntley.

Mowever, if Meridian Minerals elects to haul on U.S. 87 end local road 312 to Huntley then we feel that the financial mitigation discussed on page 3 be pursued.

DWC:Q:STP:46.gg/6

September 30, 1992

RECEIVED
OCT 01 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva:

As a retired, life long resident of the Huntley community, I am totally opposed to the proposed Meridian coal load-out facility in Huntley. Since the public hearing held in Muntley on September 22, 1992 was not a question end answer session, perhaps you can answer some questions regarding the draft E.I.S.

1. Air Quality

In the last paragraph in Chapter III, Page III-6, the egency would lead readers to believe that monitoring was done at Huntley during the temporary load-out in 1989 and 1990. It is stated thet the maximum 24-hour PM10 concentration was about 41ug/m3 with an annual average of about 14 gu/m3. Since no monitoring was done near the load-out site during that period, how can these figures be used as fact?

In Chapter IV, Page IV-11, it stated that the maximum 24-hour PM10 concentration (37.6 ug/m3) resulting from the operation indicates that the degradation of air quality would occasionally exceed the allowable PSD increment by out 1.7 times, but PSD permit requirements would not be applicable because the estimated particulate emission would only be about 12 tons per year. Was the 12-ton emission figure also taken from the aforementioned non-existent monitors? Through the duration of one load-out in 1990 there was enough emissions to nearly blot out the street lights. What should residents with respiratory problems do during the duration of this project if approval is given?

2. Noise Levels

On Page IV-13 it is stated that a water spray system will be installed to minimize fugitive dust emissions. How can this system remain operable during freezing weather? On Page IV-42 it is stated that noise generated during the load-out operation

627.0 (app) 144

would be noticed by Huntley residents and would occasionally be above acceptable levels recommended by E.P.A. The noise noticed by Muntley residents is an under statement if I ever heard one. During the load-outs in 1990, the noise from dozers pushing coal onto the conveyor belt and train locomotives moving empty and full cars, blowing their whistle with each move, along with diesel exhaust and coal dust made it impossible to leave windows open during summer nights. It was also impossible to get a decent night's sleep even with windows closed.

The agency admits that both air degradation end noise levels will exceed some standards, so how can they state that the impact to the Huntley community will be minor?

3. Recreation

Pege IV-51 states that recreation opportunities and quality in Huntley would be impacted from coal dust. Yet the agency concludes that impacts to recreation opportunities will be minor. Do you also conclude that breathing coal dust when exercising and doing every-day activities is a minor impact?

In regard to the mis-quote by Tetra Tech which I mentioned at the public hearing on September 22,1992, the road that I referred to was not Heath Street but Old Mighway 10 leading northeast out of Muntley. The other streets in that area of town, namely Date, Elm, Fir, Grape, Meath, Jute, 2nd North, and 3rd North, are all used for walking, jogging, biking, etc.

4. Transportation

Throughout the entire section on transportation from the mine to Huntley, your findings indicate there will be more traffic accidents, trucks having difficulty negotiating turns at the intersection of Mighway 87 North and Highway 312 East, the LOS reduction at the intersection of Heath Street and Highway 312 East, and at the entrance to the load-out site, the deterioration of the roads, especially Mighway 312 East end Meath Street.

Mike DaSilva
Montana Department of State Lands
September 30, 1992
Page Three

Why wasn't there more consideration given to alternate haul routes away from already congested roads? There can be no dollar amount place on those that will die or be maimed due to the truck-related accidents caused by this needless haul route.

I can only hope that you will take the concerns as expressed by people of the Huntley community seriously and not permit the load-out facility to be placed in Huntley.

Sincerely,

James Pope Box 41 Huntley MT 59037

James V. Pope

cc: Dennis D. Casey, Commissioner

---

(20)

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SEP 24 1992
STATE LANDS

1023 2nd Street East
Roundup, Montana 59072

Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, MT 59620

RE: Draft EIS for Meridian Minerals
Company's Bull Mountain Mine No.1

I have followed with interest the development of the Meridian Minerals Bull Mountain Mine No. 1 and the EIS study of the proposed mine operation.

Economically this mine is needed in Musselshell County. Numerous people are wanting and needing jobs that this mine will create.

Meridian is a responsible company that has followed all the guidelines and tried to solve any problems that were brought to their attention in a speedy and reliable manner. I feel that they will continue to do business this way.

I very much support the operation of the proposed mine and feel that our laws and our environmental concerns will be sufficient to safe guard the area around the mine as well as the truck route and load out area.

It is my hope you will allow Meridian Minerals to begin mine operation as soon as possible.

Thank you very much.

Sincerely,

Richard D. Snider

---

(19)

1023 2nd Street East
Roundup, Montana 59072

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SEP 24 1992
STATE LANDS

Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Mr. DeSilva

I am writing to voice my support for the proposed mine that Meridian Minerals Company is proposing. This is very important to Musselshell County and the surrounding area.

I find that Meridian Minerals is a very caring company. They have handled all the work and problems they have encountered in a very straight forward and quick manner. I believe that they will continue to do the same when the mine can begin operation.

This is economically important to Musselshell County and to the people that are trying to get employment in the area. We are presently seeking employment and we sincerely hope that we are able to stay in Roundup, but we feel that is only possible if the mine begins operation.

Meridian Minerals has followed all guidelines set by the EPA and because of the laws of the land they will continue to obey all the restrictions. This is for the protection of our environment. What more can a person ask.

Please grant the permit to Meridian Minerals. It is my hope that Musselshell County will prosper and so will the State of Montana.

Thank you very much

Sincerely,

Karla Snider

Karla Snider

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(21)

FORD HOILAND FORD, INC.

TELEPHONE (406) 323-1102
102 MAIN STREET
PO BOX 358
ROUNDUP, MONTANA 59072

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SEP 24 1992
STATE LANDS

September 24, 1992

To The Montana Department of State Lands:

I would like to comment on the Meridian Minerals Company, Bull Mountain Mine No. 1 Draft Environment Impact Statement. The impact on Roundup as far as economics in my estimation, has been greatly under estimated. A direct quote from your statement: "The Agency concludes that impacts on employment, personal income and population associated with disapproval of the proposed Project would be negligible. In foregone benefits, the Agency concludes that these impacts would be minor." End of quote. 21-1

Ladies and Gentlemen of the Agency, apparently you have spent little time in Roundup, Montana the past few years. We feel it would be a major impact if the mine permit is not issued.

Several community groups such as the Senior class non-alchol graduation party, the Meridian bowling team, the Bull Mountain Fire Department, Roundup Fire Department, Roundup Swim Team basketball court grant, the local 4-H Council and 4-H members and the local museum have been impacted by Meridian. The Senior Citizens and the Gateway House for Battered Women have been supplied with half a beef purchased at the annual 4-H Stock Sale and the baseball uniforms have been supplied for T-ball, Little League and the Roundup Miners Legion Teams. I would like to say," Thank You, Meridian" for your support.

We have no other company in Roundup to hand out grants and support dollars. Yes, it would be a major, major impact if the mine permit is not issued.

Yours truly,

Bruce J. Hoiland

(22)

Steve and Jeanne Charter
13838 Hwy. 87 N
Shepherd, MT 59079
947-2151

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STATE LANDS

Our family ranches the part of Dunn Mountain, upper Railroad Creek, upper Fattig Creek, and uppermost Rehoer Coulee which Meridian Minerals proposes to longwall mine.

We feel the state EIS is seriously inadequate in its assessment of the value and impacts to the land and water resources in our operation.

We do not agree with its' conclusion that our chief springs are of "low" importance. For example, we can and do water up to 350 pair off the Big Spring at the head of Railroad Creek--which the EIS classifies as being of "low" importance. A spring which runs consistently at 5 gallons per minute in eastern Montana is a valuable water resource. We disagree with the EIS' representation of the flow of Raspberry Springs at about .4 gallons per minute when our experience is that it flows as strong or stronger than the Big Spring. Similarly the flow of Red Tank Spring is represented as 1.8 gallons per minute where our experience is it is also at least as strong as the Big Spring. 22-1

The EIS' spring ranking criteria are flawed. Any consistent 3-5 gallon per minute spring is a very valuable livestock and wildlife resource. Tanks are in general superior to reservoirs for watering. The criteria assume that sources used heavily by livestock are not useful to wildlife. We disagree. Our stock use them at most the six warm months of the year, and wild animals have no competition at all when open water is most valuable to them. 22-2

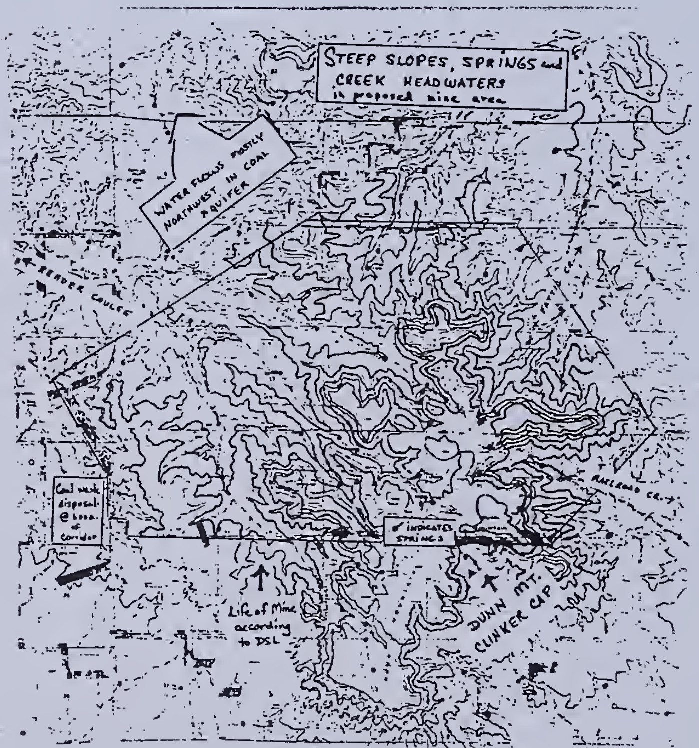
The EIS recognizes neither the existence nor the value of running water and consistent intermittent springs along Railroad and Fattig Creek both within and immediately adjacent to the proposed life-of-mine. This is a very major omission. 22-3

The EIS is very unclear about the risk to our water or the feasibility and cost of "mitigation measures" including reconstruction of natural drainages. The final EIS should specifically address impacts and reclamation potential for each significant source. And it needs to be fair about what it classifies as significant sources. 22-4

Even more inadequate is the assessment of potential erosion impacts from longwalling in country as rough as the slopes and drainages of Dunn Mountain (see attached topographic map of mine area). It is our understanding that sloughing, slope failure and erosion from altered drainage patterns is expectable. Why does the impact statement dismiss this kind of impact? The final should address erosion and reclamation costs section by section. 22-5

We support the EIS proposal for a maintenance trust fund in addition to performance bonding. We are concerned that the bond and the trust fund be realistically priced and costs justified section by section. We want the opportunity to review and comment before they are finalized. 22-6

Steve Charter Jeanne Charter


STEEP SLOPES, SPRINGS and CREEK HEADWATERS in proposed mine area
WATER FLOWS MOSTLY NORTHWEST IN COAL AQUIFER
REHOER COULEE
FATTIG CR.
RAILROAD CR.
Coal waste disposal @ head of corridor
✗ INDICATES SPRINGS
Life of Mine according to DSL
DUNN MT. CLINKER CAP

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SEP 24 1992
STATE LANDS

---

(23)

H.M. Robbins
915 1st East
Roundup, MT.

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SEP 24 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT. Department of State Lands
Capitol Station
Helena, MT. 59620

September 18, 1992

Mr. DaSilva:

I am a past County Commissioner and State Representative from Roundup. For many years, both as a public official and citizen, I have been involved with many of the issues reviewed in the DEIS for the Bull Mountain Mine No. 1 proposal. I have kept myself informed about this project since it began, some four or so years ago.

I have also felt some of the frustrations of many other citizens about how slowly this process moves along to a point of decision. I have contacted DSL, legislators and other interested parties of this project many times during these four years, to help my understanding of the issues and the process.

I must say that most of the time I have been impressed at how helpful DSL has been when I've made inquiries. I am amazed at how agency people, who have been conducting the process, stay neutral about each of the issues and attempt to stay objective in responding to the many outside influences.

I would be remiss if I didn't also state that the Company Officials from Meridian Minerals have also been very willing to provide information and discuss concerns related to their proposal. This document is based on the best efforts of many people. The DEIS is well done and only points to the fact that this project should be allowed to proceed.

Thankyou for the opportunity to offer these comments.

Sincerely,

Hershel M. Robbins

H.M. Robbins

---

(24)

MVCC
Musselshell Valley Chamber Of Commerce
Roundup Montana 59072

September 16, 1992

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

RECEIVED
SEP 24 1992
STATE LANDS

Dear Mr. DaSilva:

As President of the Musselshell Valley Chamber of Commerce I am submitting the following comments about the DEIS for Meridian Minerals Company Bull Mountain Mine Number One prepared by the Montana Department of State Lands, August 1992.

Over all it appears the conclusions of the DEIS point to relatively minor negative impacts resulting from this project as proposed. There are obviously changes and inconveniences that could result from such a project, however, the more substantial ones would only occur in the first two to three years of the project. Generally, the Chamber of Commerce agrees with the conclusions of the DEIS.

However, a couple areas tend to understate the potential for beneficial impacts. Your assumptions on page IV-4 state Meridian should be able to hire 75% of the direct mine related employment from the available work force of the Billings labor market, which includes Roundup, Broadview, Huntley and Shepherd. The other 25% are assumed to be in-migrating workers. It is further assumed 13% of those in-migrating workers would located in Roundup and 6% in rural Musselshell County. That translates to 14 in-migrating workers in Musselshell County. Up to this point we cannot disagree, however, with any aggressive recruitment effort on the part of the Roundup community area, those percentages could potentially be increased. 24-1

The problem shows up in the socioeconomic section beginning on page IV-42. No discussion deals with what portion of the 75% local area hires would come from where. Population impacts (stated as less than 2% in Roundup) do not necessarily reflect changes in employment structure. Page IV-43, paragraph 3 states that Musselshell County's . . . "economic base would not expand appreciably since most of the workers are projected to live in Yellowstone County." That conclusion is certainly not based upon any other discussion in the DEIS. 24-2

The Musselshell Valley Chamber of Commerce, utilizing a recent informal survey of the immediate area, has reached the conclusion that the economic base could indeed expand appreciably by injecting one conservative assumption; 25% of the local hire (56 workers) would come from Musselshell County. Our information shows that fully 10-15% (160-240 persons) of our workforce either has or intends to apply for a mine related job and 90% of those applicants are currently employed. Since a good portion of our work force includes mining, oil field, construction, and/or agricultural experience, we do not believe it unreasonable to project that one-quarter of the local labor market hires could be from Musselshell County. 24-3

A little further analysis is essential to reach a conclusion about the effects on our economic base.

14 in-migrating workers @ $33,309	$ 466,326.00 annual
56 local area workers @ $33,309	1,865,304.00
70 workers	$ 2,331,630.00
X .45 secondary workers (page IV-4)	
31 @ $15,397 +	$ 477,307.00
TOTAL ADDED PAYROLL	$ 2,808,937

(PLUS! Job replacement opportunities [up to 56])

This amounts to an 0.7% increase in total earning, or a 10.5% increase in non-farm earnings (Table E-14). This added payroll is valid for the 30 year life-of-mine, which is the total working life of one generation..

In our opinion that is an appreciable expansion of the economic base of our area. 24-3

On page III-34 the DEIS states, "Both employment and population growth rates of Musselshell County are representative of a stable economy with little or no economic expansion projected." A project of this magnitude has the ability to provide significant economic expansion. 24-4

Almost without exception, all the surveys the Musselshell Valley Chamber of Commerce has reviewed in the past 5 years concerning quality of life and economic security, has sited JOBS, TAXATION RELIEF and STATE BUSINESS CLIMATE IMPROVEMENT as the top concerns of citizens. This project provides a major opportunity to help address all three concerns. 24-5

The Chamber recognizes that the economic benefits to an area for such a proposal are considered outside the scope of this EIS, but such benefits are certainly not outside the scope of the public interest. If the economic benefit were concluded to be negative, we doubt that it would be considered trivial to this process.

Please select Alternative I, and based on this DEIS process, any conditions should be in the interests of both the citizens and the project sponsor.

Sincerely,

Larry Lekse
President

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR MERIDIAN MINERALS
BULL MOUNTAINS MINE No. 1 September 24, 1992

(25)

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SEP 24 1992
STATE LANDS

My name is Pete Tully. I am here representing myself as a rancher in the Bull Mountains and Northern Plains Resource Council and its local affiliate the Bull Mountains Landowners Association.

This statement will address what the NPRC and BLMA feel are the minimal requirements necessary for the DSL to approve Meridian Minerals Company's Bull Mountain Mine No. 1 permit.

1) The DSL must require realistic bonding and a sufficient permanent trust fund to restore and maintain water resources likely to be disrupted by mining and mine subsidence both on-site and off-site. This bond and trust fund must be adequate to cover the distinct possibility of dewatering approximately 14 sections of land over the life of the mine, and also, compensate for the degradation of water quantity and water quality off-site as a result of mining out the headwaters of three tributary drainages and disrupting natural groundwater flow. 25-1

We want to see actual cost figures on a site by site basis to restore and maintain impacted springs, wells, and groundwater. Also, we want to see actual cost figures and a reclamation plan should this mine impact the hydrologic balance of the surrounding area. In order to come up with these actual cost figures, the DSL should confer with individuals living and ranching in the area who actually know the relative importance of each existing spring and well. Furthermore, the DSL needs to understand these individuals need to utilize ground and surface water throughout the life of mine and on into the future. 25-2

2) The DSL must require a realistic reclamation bond to stabilize slopes and control subsidence-caused erosion. In order to calculate the total cost of reclamation, the DSL must require a detailed analysis of the slopes within the impacted area and how subsidence will affect these slopes. Surface damage due to subsidence should be scrutinized more closely since movement may occur in any slope over 20% grade. Much of the impacted area has slopes with a far greater percentage than this 20% grade. 25-3

3) We perceive Meridian's interim coal hauling plan to Huntley as an unreasonable hazard and a threat to public safety. We feel the DSL should require coal transportation from the outset to be provided by a conveyor, similar to that in Colstrip, down Halfbreed Creek to Roundup and by a common carrier rail spur built from Roundup along the old Milwaukee Road right-of-way to the mainline at Cushman. 25-4

This scenario would alleviate safety concerns over trucking, alleviate the burdensome costs of necessary road repair, provide Musselshell County with the tax revenue from a coal load out facility and provide Roundup with a Public Service railline.

4) We feel the DSL must require a state-of-the-art covered tipple for coal loadout. 25-5

5) We request that the DSL give formal notice to all interested parties prior to developments and revisions of permit requirements, so we can be assured that the final permit has adequate safeguards. 25-6

6) Finally, we strongly urge any property owner within a 10 mile radius of the life of mine to monitor their pre-mine water for both quantity and quality and do so on a regular basis. They should try to ascertain the volume of flow and have a complete chemical analysis done by a qualified lab. This monitoring will be necessary to provide data to support your case should you believe your water has been impacted by this proposed mine. Under present law, the burden of proof lies upon you- the impacted property owner not upon Meridian Minerals Co. whose mine may have damaged or degraded your water. Therefore, no matter what may have been implied, Meridian or their assignees are not likely to volunteer assistance or compensation unless you can prove in court that their activities have damaged you.

I know from first had experience that when push comes to shove, Meridian Minerals Company is NOT a good neighbor.

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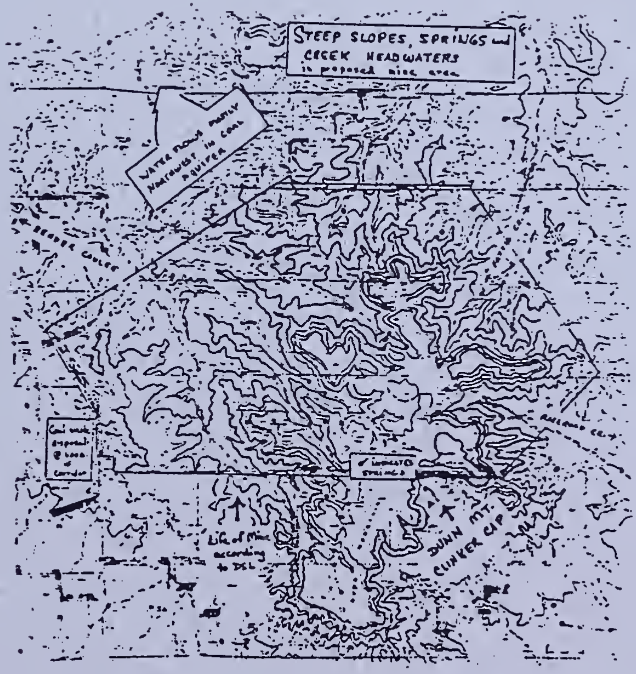
STATE LANDS


STEEP SLOPES, SPRINGS and CREEK HEADWATERS in proposed mine area
WATER FLOWS MOSTLY NORTHWEST IN COAL AQUIFER
Life of Mine according to DSL
DUNN MT. CLINKER CAP
impacted springs
Coal waste disposal @ loc. of corridor

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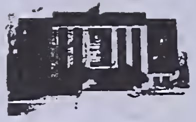
STATE LANDS

(26)



BOARD OF COUNTY COMMISSIONERS
M. O. BREWER
SUE M. OLSON
KELLY GEBHARDT

County of Musselshell
ROUNDUP, MONTANA

JANE E. MANG
Clerk & Recorder
MARY C. NELSON
Treasurer
Supt. of Schools
Assessor
G. PAUL SMITH
Sheriff
VICKI KNUDSEN
County Attorney
DONA C. ROBSON
Clerk of District Court
JOHN RAE
Coroner
COLETTE Y. MADISON
Public Administrator
ROBERT E. MIHALOVICH
Justice of the Peace

September 18, 1992

Mr. Mike DeSilva
Environmental Specialist
MT. Dept. of State Lands
Capitol Station
Helena, MT. 59620

Dear Mr. DeSilva:

As a public official, I am obligated to be aware of the issues and concerns of our citizens, particularly if my decisions will greatly influence the outcome. I, along with the other Commissioners of Musselshell County, have made it my business to read about and participate in this EIS process, which has resulted from the permit applications package (PAP) submitted to DSL from Meridian Minerals Co.

In reviewing this DEIS document, I've tried to keep in mind that this EIS is primarily a Summary of the process methodology, those issues considered and those eliminated, the project proposal, and the anticipated impacts to the many aspects of our environment. The tremendous volumes of information leading to this document are staggering. Thousands of pages of permit application, deficiency correspondance, responses, baseline data, related permit applications to other agencies, etc., also must be considered when evaluating the conclusions set forth in the DEIS document.

There should be no question that the public has had the opportunity to be informed about this project and to participate in this process. Scoping Sessions, Public information meetings, public hearings, published public notices, agencies mailings, dozens of media reports in newpapers, television and radio; even "informal legislative informational meetings" have provided more than ample information about this project over the past 3-4 years. This is a NON-ISSUE.

In consideration of the above, I can unequivocally state that, although the process is perhaps too slow and cumbersome for all parties involved, I have confidence in the process. This DEIS is thorough and to the point. The potential for negative impacts when compared to many other potential development projects I can envision, is very much within reason.

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I, along with the other Commissioners of Musselshell County, do not see where this proposal imposes or has the potential to impose unacceptable impacts on the human environment. We encourage Montana DSL to approve the applicant's plan of operation. We are confident the plan can and will meet the requirements of all applicable State laws.

Sincerely,

Kelly Gebhardt
Kelly Gebhardt, Commissioner
Musselshell County

---

(27)

MUSSELSHELL COUNTY SHERIFF'S DEPARTMENT
G. PAUL SMITH — SHERIFF
ROUNDUP, MONTANA 59072
PH (406) 323-1402 OR (406) 323-1231

JERRY CAMPBELL, Undersheriff
LES OSBORNE, Chief Deputy Sheriff

BONI SEIDLITZ, Dispatcher & Clerk

September 24, 1992

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SEP 24 1992
STATE LANDS

Mike DaSilva
Enviromental Specialist
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. Dasilva,

My name is Paul Smith and I am the Sheriff of Musselshell County. I would like to address the impacts to Law Enforcement agencies that will occur because of the Bull Mountain Mine Project.

I am in full agreement with the statement on page IV-46, that Law Enforcement agencies in the effected areas are currently understaffed. However, without the coal mine, my department will continue to remain understaffed given the current financial outlook for Musselshell County even though the work load for the Sheriff's Office is on the rise. Also, at the present time Musselshell County is seeing an increase in population. This is based on the present lack of available housing in Musselshell County as compared to the past two years. This involves the City of Roundup as well as the subdivisions in the Bull Mountains. There is already an increase in traffic and criminal activity in Musselshell County without any increase in finances to address these problems.

However, because of the prospect of the proposed coal mine becoming a reality, the tax base should be improved sufficiently to address the shortages that are presently occuring and will continue for the long run. Also, because of the proposed coal mine, Musselshell County is at the present time doing a coordinated effort to study the impacts due to the coal mine project and have begun a planning process by which to address all potential impacts in a productive, well organized mannor. 27-1

If in fact the coal mine project becomes a reality and Musselshell County is impacted as projected by the Enviromental Impact Statement dated August 1992, Mosselshell County will become eligible for assistance from the Montana Coal Board for financing solutions to the impacts in the short run.

Therefore, I, as Sheriff of Mosselshell County, agree that there will be increases in traffic on US Highway 87 along with an increase in criminal activity due to population increases. However, I feel that because of the coordinated efforts and the planning that Musselshell County is presently doing to address the impacts and with possible financial assistance from the Montana Coal Board, that Musselshell County will be well prepared for any impacts from the mine project, especially concerning those problems facing Law Enforcement.

Sincerely,

G. Paul Smith
G. Paul Smith
Mosselshell County Sheriff's Department

(28)

GERALD BARTOW, President of Council
ELLEN LEE, Clerk/Treasurer
VIOLET OLSEN, Assistant Clerk
GARY THOMAS, Commissioner of Public Works
VICKI KNUDSEN, Attorney
ROBERT MIHALOVICH, Plant Manager
DONALD PICCHIONI, Fire Chief

SALLY ARMSTRONG, Mayor

City of Roundup
Montana

ALDERMEN
LINDA GETCHELL, 1st Ward
JAMES SCHLADWEILER, 1st Ward
GERALD BARTOW, 2nd Ward
ERNIE SATTERTHWAIT, 2nd Ward
JOYCE BREWER, 3rd Ward
WILLIAM EDWARDS, 3rd Ward
WILLIAM FUNK, 4th Ward
BRUCE HOLAND, 4th Ward

September 24, 1992

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SEP 24 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva:

When the Draft Environmental Impact Statement came out I instructed my staff to study the document and report to me any adverse impacts to the City of Roundup. I also reviewed the DEIS myself. Neither my staff nor myself can find any impact to the City of Roundup that isn't beneficial.

As a general statement I would say you have underestimated the beneficial impacts to employment, personal income, and public sector fiscal conditions. Your conclusions were minor during the life of the mine. With the depressed job market and taxable valuation in Roundup, any moderate increase in jobs, both primary and secondary will have a significant benefit. If this project can turn Roundup's economy from negative to positive, then these benefits are substantial. 28-1

In conclusion, as Mayor of the City of Roundup I urge your approval of Alternative A1 with reasonable conditions as do a vast majority of the citizens of the City of Roundup.

Sincerely

Sally J. Armstrong

Sally J. Armstrong
Mayor

---

(29)

Roundup Public Schools

MRS. SYLVIA SHELHAMER
District Clerk
Phone 323-1507

School Districts No. 55 and 55-H
P.O. Box 717
Roundup, Montana 59072

J. JAY ERDIE
Superintendent of Schools
Phone 323-1507

ALLEN W. CHERY, Sr.
High School Principal
Phone 323-2402

PAULETTE PRATT
Elementary Principal
Phone 323-1512

GARY F. RAY
Activities Director
Phone 323-2402

September 24, 1992

RECEIVED
SEP 24 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva

From day one and reflecting back to where this process first started with the land exchange up through the present time and final stages leading to permission for permitting, the propensity, the time and the effort have been couched in economic development; a major concern for the State of Montana in general but in this case, Musselshell County and surrounding area in particular. As was so succintly put by a Roundup life-time businessman in a feature article appearing in the **Great Falls Tribune**, Sunday, September 20, 1992, the "pivotal point" in the economic survival of this area is a successful conclusion on the mining permit being granted. Such approval affects every taxpayer in Musselshell County. This is noted in the **Draft Environmental Impact Statement**, August, 1992, page 44, ***Impacts to public sector fiscal conditions from mining-related activities*** and yet, I suggest the fiscal impact from mining-related activities would not be minor as suggested on page 46.

As is noted on page 44, and I quote, "Roundup Elementary and High School districts should realize increased general fund revenues of 30 percent, or about $700,000 per year through taxation from mining-related activities." This statement is true if general fund revenues include school foundation revenues, other non-tax revenues such as investments on earnings, motor vehicle fees, corporation license tax, etc. plus local tax levies. However, an additional comparison should be added to this discussion: $700,000 per year through additional taxation is a 200% increase when compared to current local tax levy amounts. Over the life of the mine, that is approximately $20,000,000 of additional tax dollars to Roundup Elementary and High School Districts. 29-1

In conclusion, this revenue cannot be considered only of minor benefit as you have concluded.

Thank you.

Sincerely

J. Erdie

J. Jay Erdie, District Superintendent
Roundup Public Schools

cc File

ACCREDITED BY THE MONTANA STATE DEPARTMENT OF PUBLIC INSTRUCTION AND THE NORTHWEST ACCREDITING ASSOCIATION

---

(30)

September 24, 1992
25 Gibbtown Ave.
Roundup, Montana 59072

RECEIVED
SEP 24 1992
STATE LANDS

Mr. Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, Montana 59601

Dear Mr. DaSilva:

Initially, I would just like to say that I am totally in favor of a clean, stable environment.

However, I think it is time for the radicals to take off their blinders and take a good look at what is happening, not just in Montana but in the gold old U. S. of A.

The economy is a disaster, crime is at an all time high, people are living in their cars and on the streets, unemployment is rampant. These facts are all traceable to one common cause, and that is: NO JOBS.

As a buineasman in Roundup, I can personally vouch for how tough times are in this my hometown, and I can also see a solution: The proposed Meridian Minerals Coal Mine.

I personally feel it is time for all of us to choose between trees and rocks, or people and jobs. Let's quit our petty bickering and get the ball rolling, the time is now.

Sincerely,

Alvin E. Mills

ALVIN E. MILLS

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SEP 24 1992
STATE LANDS

Comments
Draft EIS
Bull Mountain Mine No. 1
Meridian Minerals
By Don Golder
P. O. Box 1705
Billings, Montana 59102
Roundup Hearing--September 24, 1992

Tonight I would like to talk a little more on the specific advantage of the coal delivery to a rail-head in Roundup.

First of all I would like to read to you from a document analysing 11 temporary loadout facilities, dated January 31, 1992 with a review team of Robert Ochsner, Mike Dasilva and Anne Cossit, entitled Draft Bull Mountains Mine No. 1 Temporary Load Out Facilities Alternative Sites Summary, summarizing an on site review January 29, 1992 and faxed out of the Georesearch office April 10, 1992. I would like to read as follows from Site 9.:

> The site area is located to the west of the intersection of highways 12 and 87 along the Burlington Northern Railroad right-of-way. The general setting is a river valley defined by Highway 12 and rock rims to the north and the river to the south. the river valley in this area contains cropland, low development housing and some light industry (a greenhouse), The town of Roundup is approximately one mile to the northeast.
>
> Advantages. Advantages to this site are similar to Lavina -- right of way ownership, power availability and water from the Musselshell River. This site is 16.8 miles from the mine, which is the closest site of all considered.
>
> Disadvantages. There are no existing mainline track, siding or loadout facilities. Although track previously existed along the right of way, track and other facility will create some environmental impact. Site may impact local residences. Thirty one miles of track will need to be laid to reach the site area. Although truck haul miles are shortest to this site 16.8 miles, the trucking would be permanent over the life of the mine. Cumulative truck miles will exceed any other site by a factor of approximately ? to 1, based on a 30 year operation at Roundup compared to a 3 year temporary facility. There are 72 track miles to Laurel, the longest distance of all potential sites. Estimated cost of track and facilities construction is $6.750 million.

31-1

The difference in mileage between the Mine-site Laurel and the Roundup-Cushman-Laurel route is approximately 6 1/2 miles of rail line. The mine-site route is estimated to cost $33 million. To replace the line of the Milwaukee right of way is estimated to cost $6.750 million. The difference between the two rail line costs is about 26.25 million, enough to begin to figure out another way other than trucking to get the coal from the mine to the railroad. 31-1

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(32)

RECEIVED
SEP 24 1992
STATE LANDS

Comments
Draft Environmental Impact Statement
Bull Mountain Mine No. 1
Meridian Minerals
By Don C. Golder
P. O. Box 1705
Billings, Montana 59102
September 23, 1992

In Huntley last night, I spoke of an alternate route for coal delivery. Tonight I would like to bring out an alternative solution for the subsidence over mined areas, backstowing or backfill. I appreciate the fact that it is cost prohibitive to do this.

The reason I bring up the issue of subsidence is because of the fracturing of the overburden that will undoubtedly take the spring water down and out of reach for livestock and wildlife. 32-1

If you compare the cost of real water replacement to the cost of back stowing, I wonder just what the differential would be. Backstowing, if done right, can reduce the subsidence 10% to 15%, which would in turn help to stabilize the perched water tables. 32-2

Let's consider the cost factors vs. water production in a suggested water replacement scheme in the Permit Application, a guzzler (water catchment system). A guzzler consists of a rain water catchment apron, drain pipe and trough, storage tank, float valve and drinking basin. The inadequacies of such a system, if it is drawn to scale in the permit application, are that an inch of rain on a thousand square foot apron will produce 623.37 gallons of water, and the storage tank, if drawn to scale, will hold 216.4 gallons of water. There are no provisions for overflow of water from the storage tank, or siltation clean out access to remove the dirt that will inevitably accumulate. 32-3

The cheapest tank that I know of at 500 gallons is $400.00. A 2000 gallon fiberglass underground storage tank will cost $2500.

A 5000 square foot rainwater catchment apron will collect 3116 gallons of water out of an inch of rain. The same size apron would collect 43,624 gallons of water annually with 14 inches of rain a year. If you could catch it all, the cost would be prohibitive for anything except wildlife. 32-4

The DEIS equates one of these guzzlers to a spring

---

producing 1 GPM. A spring producing 1 gallon per minute has an annual production of 525,600 gallons. The cost of developing a 1 GPM spring is around a thousand dollars and possibly up to $2500 complete for materials, and the water is steady and reliable.

I use the guzzler as an example of an alternate water source, and the plan concludes that it is for wildlife alone.

If Meridian is in earnest about replacing the water, possibly backstowing would be an alternate route. Otherwise, they should post a bond of not less than $500,000.

---

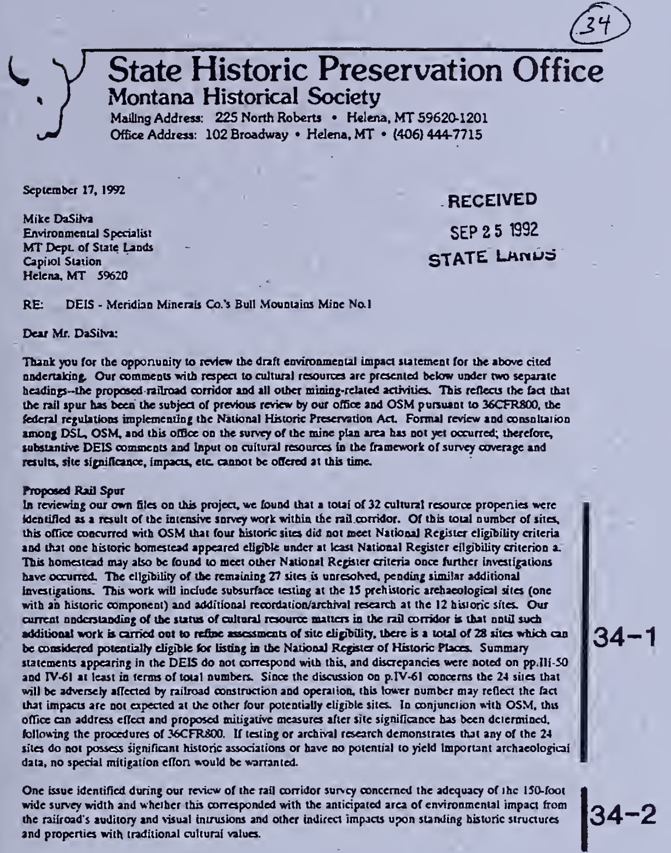
(33)

RECEIVED
SEP 24 1992
STATE LANDS

Comment
Bull Mountain Mine No. 1
Meridian Minerals
By Ellen Pfister
926 Yale
Billings, Montana 59102

Regarding the proposed rail route from the mine site to Broadview, it should be noted for a matter of public consideration that the 1984 Hawk Creek Fire which burned 148,000 acres of mostly private land, including the mine site, began approximately 9 miles west of U.S. 87 on the ridge where Meridian proposes to put its trackage. The prevailing winds on those late August-early September days were out of the Northwest. The other prevailing wind direction on that divide is out of the Southwest, and if that had been the case, that fire could just as easily have gone to the Northeast through the heavily timbered country into Halfbreed Creek. Trains are notorious for starting fires. On the Majerus Road Route, with low population density and low water availability, one would have limited means to fight fire. By the time Meridian could get heavy equipment to the fire, it could already be out of control and unstoppable. When the 1984 fire came off the East end of Dunn Mountain, it was a fireball that sounded like a tornado, and was clocked traveling 1 1/8 miles in 8 minutes. Halfbreed Creek is already a fire waiting to happen, but Meridian locating a track on a windy ridge all but ensures something like that happening. One of the advantages of putting the tracks in an alternate location in Musselshell county would be the higher visibility to ensure fire suppression and more water with which to do it. Montana law also consigns severe liability to those who start fires. I would like to find the legendary woodcutters who started the western end of the Hawk Creek Fire. They are still in hiding. Everyone will know Meridian. 33-1

September 24, 1992



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State Historic Preservation Office
Montana Historical Society
Mailing Address: 225 North Roberts • Helena, MT 59620-1201
Office Address: 102 Broadway • Helena, MT • (406) 444-7715

September 17, 1992

RECEIVED
SEP 25 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

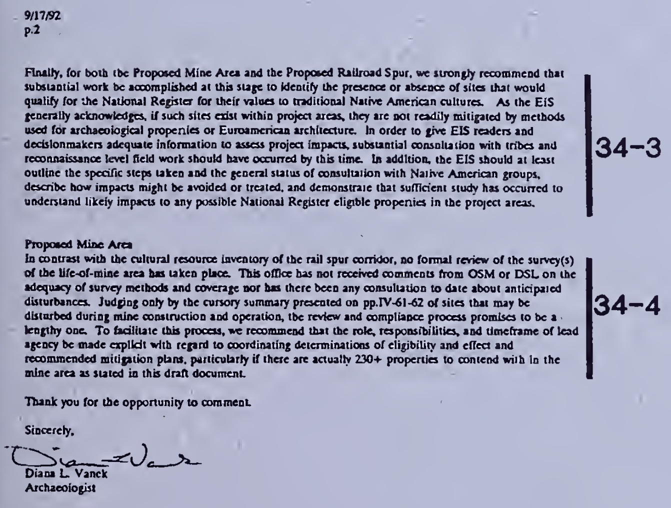
RE: DEIS - Meridian Minerals Co.'s Bull Mountains Mine No.1

Dear Mr. DaSilva:

Thank you for the opportunity to review the draft environmental impact statement for the above cited undertaking. Our comments with respect to cultural resources are presented below under two separate headings--the proposed railroad corridor and all other mining-related activities. This reflects the fact that the rail spur has been the subject of previous review by our office and OSM pursuant to 36CFR800, the federal regulations implementing the National Historic Preservation Act. Formal review and consultation among DSL, OSM, and this office on the survey of the mine plan area has not yet occurred; therefore, substantive DEIS comments and input on cultural resources in the framework of survey coverage and results, site significance, impacts, etc. cannot be offered at this time.

Proposed Rail Spur
In reviewing our own files on this project, we found that a total of 32 cultural resource properties were identified as a result of the intensive survey work within the rail corridor. Of this total number of sites, this office concurred with OSM that four historic sites did not meet National Register eligibility criteria and that one historic homestead appeared eligible under at least National Register eligibility criterion a. This homestead may also be found to meet other National Register criteria once further investigations have occurred. The eligibility of the remaining 27 sites is unresolved, pending similar additional investigations. This work will include subsurface testing at the 15 prehistoric archaeological sites (one with an historic component) and additional recordation/archival research at the 12 historic sites. Our current understanding of the status of cultural resource matters in the rail corridor is that until such additional work is carried out to refine assessments of site eligibility, there is a total of 28 sites which can be considered potentially eligible for listing in the National Register of Historic Places. Summary statements appearing in the DEIS do not correspond with this, and discrepancies were noted on pp.III-50 and IV-61 at least in terms of total numbers. Since the discussion on p.IV-61 concerns the 24 sites that will be adversely affected by railroad construction and operation, this lower number may reflect the fact that impacts are not expected at the other four potentially eligible sites. In conjunction with OSM, this office can address effect and proposed mitigative measures after site significance has been determined, following the procedures of 36CFR800. If testing or archival research demonstrates that any of the 24 sites do not possess significant historic associations or have no potential to yield important archaeological data, no special mitigation effort would be warranted. 34-1

One issue identified during our review of the rail corridor survey concerned the adequacy of the 150-foot wide survey width and whether this corresponded with the anticipated area of environmental impact from the railroad's auditory and visual intrusions and other indirect impacts upon standing historic structures and properties with traditional cultural values. 34-2



9/17/92
p.2

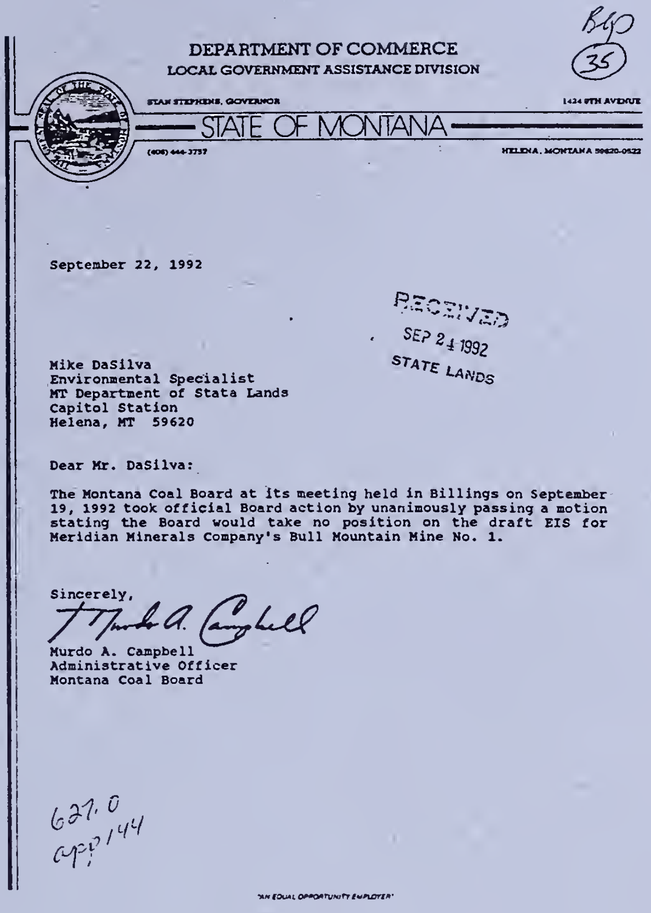
Finally, for both the Proposed Mine Area and the Proposed Railroad Spur, we strongly recommend that substantial work be accomplished at this stage to identify the presence or absence of sites that would qualify for the National Register for their values to traditional Native American cultures. As the EIS generally acknowledges, if such sites exist within project areas, they are not readily mitigated by methods used for archaeological properties or Euroamerican architecture. In order to give EIS readers and decisionmakers adequate information to assess project impacts, substantial consultation with tribes and reconnaissance level field work should have occurred by this time. In addition, the EIS should at least outline the specific steps taken and the general status of consultation with Native American groups, describe how impacts might be avoided or treated, and demonstrate that sufficient study has occurred to understand likely impacts to any possible National Register eligible properties in the project areas. 34-3

Proposed Mine Area
In contrast with the cultural resource inventory of the rail spur corridor, no formal review of the survey(s) of the life-of-mine area has taken place. This office has not received comments from OSM or DSL on the adequacy of survey methods and coverage nor has there been any consultation to date about anticipated disturbances. Judging only by the cursory summary presented on pp.IV-61-62 of sites that may be disturbed during mine construction and operation, the review and compliance process promises to be a lengthy one. To facilitate this process, we recommend that the role, responsibilities, and timeframe of lead agency be made explicit with regard to coordinating determinations of eligibility and effect and recommended mitigation plans, particularly if there are actually 230+ properties to contend with in the mine area as stated in this draft document. 34-4

Thank you for the opportunity to comment.

Sincerely,

Diana L. Vanek
Archaeologist



Bkp
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DEPARTMENT OF COMMERCE
LOCAL GOVERNMENT ASSISTANCE DIVISION

STAN STEPHENS, GOVERNOR
1424 9TH AVENUE
STATE OF MONTANA
(406) 444-3757
HELENA, MONTANA 59620-0522

September 22, 1992

RECEIVED
SEP 24 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Department of Stata Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva:

The Montana Coal Board at its meeting held in Billings on September 19, 1992 took official Board action by unanimously passing a motion stating the Board would take no position on the draft EIS for Meridian Minerals Company's Bull Mountain Mine No. 1.

Sincerely,

Murdo A. Campbell

Murdo A. Campbell
Administrative Officer
Montana Coal Board

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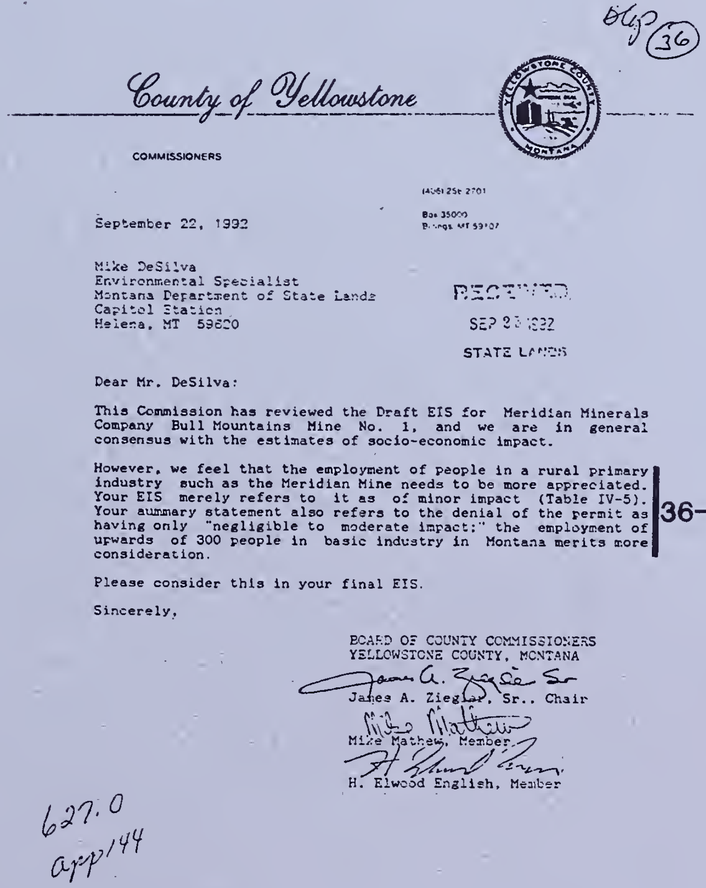
app/44

"AN EQUAL OPPORTUNITY EMPLOYER"



Bkp ㊱

County of Yellowstone

COMMISSIONERS

(406) 256-2701

Box 35000
Billings, MT 59107

September 22, 1992

Mike DeSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

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SEP 2[illegible] 1992
STATE LANDS

Dear Mr. DeSilva:

This Commission has reviewed the Draft EIS for Meridian Minerals Company Bull Mountains Mine No. 1, and we are in general consensus with the estimates of socio-economic impact.

However, we feel that the employment of people in a rural primary industry such as the Meridian Mine needs to be more appreciated. Your EIS merely refers to it as of minor impact (Table IV-5). Your summary statement also refers to the denial of the permit as having only "negligible to moderate impact:" the employment of upwards of 300 people in basic industry in Montana merits more consideration. 36-1

Please consider this in your final EIS.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
YELLOWSTONE COUNTY, MONTANA

James A. Ziegler Sr
James A. Ziegler, Sr., Chair

Mike Mathew
Mike Mathew, Member

H. Elwood English
H. Elwood English, Member

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RECEIVED
SEP 25 1992
STATE LANDS

2116 Virginia Lane
Billings, MT 59102
September 22, 1992

Mr. Mike DaSilvs
Environmental Specialist
MT Dept. of State Lands
Cepitol Station
Helena, MT 59620

Dear Mr. DeSilva:

I support the development of the Bull Mountains Coal Mine Project. The project has undergone extensive environmental and socio-economic review. The coal to be mined offers a unique energy resource for the State of Montana. The higher BTU, lower sulphur content of the coal provides an environmentally superior fuel for many energy needs both within the State and in the surrounding region. The jobs that would be provided by this mine are badly needed in eastern Montana.

The socio-economic impacts of this mine need to be assessed in terms of the natural need for growth and change in western communities. The idea that socio-economic impacts result only from growth in the economy is ridiculous and a short sighted way to approach the topic of socio-economic impacts assessment. Western communities have always undergone growth and change. That's a characteristic of our region. Mining also has played an integral part in the culture of the West throughout its entire history of European settlement.

One needs only to look at the devastating socio-economic impacts of economic stagnation which has occurred in the State of Montana during the past decade, with families being wrenched apart as children and neighbors have had to move out of the region in order to find jobs, as schools have been deteriorating or closing down for lack of an economic base to provide the funds needed, and as health care has nearly vanished in many rural portions of our state, to realize the real impacts of the lack of economic development in Montana.

The notion that growth and change are not a normal part of life anywhere, let alone in the Western U. S., is a recent peculiar notion developed primarily as an expedient to halt energy developments by those who are in a privileged position regarding the status quo. Masquerading as progressive, this no-growth attitude is a profoundly conservative approach which would exclude opportunity for others while maintaining privileged status for the few, for whom the status quo during this brief moment in history appears to them to be the eternal order of things, and the way things should be forever after.

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Mr. Mike DaSilva
September 22, 1992
Page two

Clearly attempts should be made to handle development in the most environmentally sound way possible, and in a manner which minimizes disruptive socio-economic impacts to the extent reasonable. However, to proceed on the notion that change is a negative socio-economic impact is to go counter to the entire history of this State and the tradition and culture of the American West. Indeed, nothing has more characterized the history of North America than change and growth. Communities must change and evolve in order to remain vital. Without change and growth, opportunities for the young are sacrificed in order to maintain privileges for the old.

I have two children who are growing up in Montana. I would like a future for them and this State in which young people might hope to find productive employment in some field other than as a servant in the tourist industry. I urge that this project be allowed to go forward for the good of the State of Montana, and to provide some hope for devastated rural communities elsewhere throughout this state and region that progress is possible, and that their futures are not doomed to a zoo-like existence in somebody's else's concept of what the American West should be.

Sincerely,

Douglas Richardson

Douglas Richardson, PhD
2116 Virginie Lane
Billings, MT 59102

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627.0
app 144

101 Eastbrook
Chadron, NE 69337

RECEIVED
SEP 28 1992
STATE LANDS

Re: Bull Mountain Mine No.1

Dear Mr. DaSilva:

Our names are Charles and Barbara Cropp. We bought the land next the the proposed mine site September, 1987, Sect 23, township 6 North, Range 26 East, Tracts 59 and 60. The purpose for buying this plot of land was for retiring, building a home, enjoying the beautiful scenery, observing the wildlife, and relaxing in the peaceful tranquility of the mountains. This particular plot was our choice because of the abandon mining and the knowledge that we would only have neighbors on the one side of us. We voiced these objectives at the last meeting in Roundup.

We received the Environmental Impact Statement and would like to point out some of our concerns about even considering the possibility of trying to retire there now.

38-1 AIR QUALITY-- Coal dust is a major problem, no matter how much watering is done. The dust creates the possibility of explosions at the mine site as well as the dust related to the trucks that will be passing the property constantly.

38-2 GROUND WATER-- We were planning on putting down a well a few years ago so we could proceed with the building plans. When we attended the meeting we became concerned about the effects that the mining process will have on the direction of the water flow as well as the quality of the water that will be available. There is even the possibility that the mining could change the water flow to such an extent that we will now be unable to even get water for a well.

38-3 WILDLIFE ENVIRONMENT--The wildlife has already disappeared from the area we own. We saw many kinds of wildlife on the property and were looking forward to encouraging the wildlife to remain in the area. Because of noise and the altering of the terrain around our property that is no longer possible.

38-4 TRAFFIC-- The amount of traffic that will be necessary in order to transport the coal, we will be experiencing a constant caravan of trucks to haul the coal from the site. This will create a noise level equal to living on a busy highway, the exact reason we choice this area so we could avoid noisy traffic. This vibrations from such 38-5 traffic will also make building a risky proposition. There will be no way of protecting the building from becoming unstable from the constant vibrations. The development of a railway to the site will only increase the noise and vibrations. One of our first considerations when we look at property is to make sure there are no railways near by.

38-6 On page IV-41, it appears to us that our residence would be closer that the 4500 feet stated. We're not only concerned with the noise level but with the vibration levels from the underground mining activity.

38-7 I know employment is a big consideration but we feel that the quality of life for those who bought property or owned property in the area is being denied and ignored. It seems that big companies generally have their way because of the big bucks. What considerations have been made concerning those of us who have the unfortunate fate of being in the wrong place at the wrong time?

We would not have considered this property if we had even suspected something like this would be coming along. At the time of the purchase we asked about the possibility of the mine being reopened. We were led to believe that the mine had been abandoned and that 38-8 mining there was not at all likely. The area around the site should be included in the plan and those in this area should be compensated in some way. It is not fair to destroy peoples dreams, hopes, years of saving and laboring without some consideration.

Sincerely,

Charles + Barbara Cropp

Charles and Barbara Cropp

101 Eastbrook

Chadron, NE 69337

(39)

HUNTLEY COMMUNITY CLUB, HUNTLEY, MT 59037

RECEIVED
SEP 23 1992
STATE LANDS

September 22, 1992

Dennis Casey, Commissioner
Mike DaSilva, Environmental Specialist
MT Dept of State Lands
Capitol Station
Helena, MT 59620

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR MERIDIAN MINERALS COMPANY'S, BULL MOUNTAINS MINE NO. I AND HUNTLEY LOAD-OUT FACILITY. 39-1

Dear Mr. Casey:

The Huntley Community Club/Environmental Committee would like to request of you a 30-60 day extension on the comment period for this document.

The reasons for this are:

1. We are a local grass roots group whose main concern until 1990 was taking care of the Barkemeyer Park. Since then, Meridian Minerals was allowed by MT Dept of State Lands to use this Community for its temporary load-out facility. Shortly after the load-out was in operation the HCC/EC was formed to address the concerns of the Huntley Community and surrounding area, regarding the load-out.

2. Since the Community of Huntley was not on the original list of communities to even have a scoping meeting planned for it, this Community had to go to the MT Dept of State Lands and request a meeting, which was held after the closing dates to even comment. All ready this Community was being treated as a write off in this project and yet has the most to lose in its quality of life. 39-2 Because of this meeting and subsequent meetings sponsored by the Huntley Community Club the Draft EIS that was supposed to be out in the Fall of 1991, has now just been released. A WHOLE YEAR LATER! 39-3

3. Since this Community Group does not have the expertise at our disposal, that both Meridian Mines and MT Dept of State Lands does, we wonder WHY we are expected to assess this document in 30 days. We are sharp, but not that sharp! 39-4

page 2

4. For these reasons we are requesting an extension of time for us to be able to find the experts that can help us review this document so that our comments will be valid comments and will stand up to an appeal, if needed. We think this is the only fair thing that you Mr. Casey can do to make sure that our Community is just not railroaded into a load-out facility that is only being placed here because Meridian Minerals doesn't want to spend the time nor the money to address another site location and its impacts. To date this group HCC/EC does not feel that the Montana Environmental Protection Act has been adequately addressed. 39-5

Sincerely,

Steven M. Erb

Steven M. Erb, Pres.

---

(40)

Robert Knickerbocker
P O Box 81
Huntley MT 59037

September 24, 1992

RECEIVED
SEP 29 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena MT 59620

Dear Mike DaSilva,

My name is Robert Knickerbocker. I am the President of the Huntley Water and Sewer District.

As a member of the local government that over see's the safety and quantity of our citizens water, I'd like to make a statement;

Our goal and #1 concern is to see that everyone, now and in the future, has a safe and steady supply of water at an affordable price. We the board of directors, take this job very seriously. Over the last 2 years we have taken much needed steps to insure the quantity and quality of our water.

We have applied to the state for a grant for well head protection. We feel that it is very important to know what could and/or may contaminate our source of water.

We have also contracted Morrison/Maierly Engineers to do a water system deficiency study and recommended improvements. In the study it was determined that we have 4 priorities that must be done.

1. Is the most critical. This calls for a new well and pumphouse. A new well and pumphouse "must" be installed to provide a second source of water for the town, which is a MDHES requirement for small community water systems.
2. Includes the looping of existing deadend lines, adding mainline valves to the existing system, replacing 2 fire hydrants, and adding 7 new ones. This will provide the necessary circulation of water in the existing system and provide the back bone for fire fighting protection to the town.
3. Would install a new 100,000 gallon elevated storage tank which would increase the domestic water supply and provide complete fire protection for the town.
4. Is to add a gas chlorination system to the existing well house.

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The district has already spent thousands of dollars and many, many hours of donated time on this project. The engineers have estimated the cost of improvements at $700,000.00.

I have given you some of the information of what the District is planning. Now I'd like to voice some of my concerns.

What concerns me the most is that in Chapter V of the EIS the one local government that directly over sees the quality and quantity of water for the town of Huntley is not listed. I am talking about the Huntley Water and Sewer District. 40-1

If we were contacted for consulation and coordination, some of my other concerns would probably have been eased.

I'm concerned about Meridians 30,000 gallons a day well. The final site for our 2nd, state mandated, well is not finalized. How will it effect our quantity and quality? 40-2

I'm concerned about our projected 1993 mid-season construction, depending on our ability to get funding. How will the expected increase in traffic effect the people and streets when they have to be detoured around construction? 40-3

I'm concerned about the financial health of the water district. There is only approximatly 98 users on our system at present. Because we have so few, we have to charge these users more. I'm in hopes that with the improvements being planned, more people will move to Huntley. We already have beauty, with the load out located in Huntley I don't expect to see many new hook ups. If anything the odds are that we'll see some disconnects. We found out when Meridian was in town the last time, that we can't depend on them for much financial input. As a district we are impowered to request a tax if we are unable to meet our financial obligations. In this day and age when every politician tries to add a new tax at the drop of a hat, I'm dragging my feet. I don't want to levy a tax on someone who is a ½ of a mile from our water main, simply because they are in the district. We can not loose "any" users. I can not stress the point too much. We can not loose "any" users! 40-4

To sum up my statement I'd like to say that the EIS is incomplete. I would like to see an extension on the study. 40-5

Thank you very much for listening to me and I hope you take into consideration my concerns.

Sincerely,

Robert Knickerbocker

Robert Knickerbocker
President of the Huntley Water & Sewer District

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MERIDIAN
Minerals Company

September 30, 1992

RECEIVED
OCT 0 1 1992
RECLAMATION DIVISION

Montana Department of State Lands
Attn: Mike DaSilva
Environmental Specialist
Capitol Station
Helena, Montana 59620

Re: Draft Environmental Impact Statement (DEIS) for the Bull Mountains Mine No. 1

Mike:

I am writing to comment on the DEIS for the Bull Mountains Mine No. 1. My concern is focused on certain language regarding failure of the proposed mitigation plans. I object to such commentary and am requesting that all references to mitigation failure be removed throughout the DEIS. **41-1**

As the Department is aware, if the permit application is approved, then lawful mitigation is required in accordance with the Montana Surface and Underground Mine Reclamation Act (MSUMRA). If such mitigation cannot be attained, then no mining permit would be granted from MDSL. In either instance (approval or disapproval of the mining permit), the commentary which declares irreversible and irretrievable losses in the event of mitigation failure is not accurate. **41-2**

If the mining permit is approved, then MSUMRA requirements must be met and therefore the DEIS commentary regarding mitigation failure is in conflict with the approved mining permit. If the mining permit is not approved then there are no mine impacts.

The DEIS includes a statement in Chapter II, Subpart A, item 1 (page II-1) and Chapter IV, Subpart A, item 1 (page IV-1), and both accurately present an assumption that an approved permit application "is in compliance with MSUMRA and other applicable State and Federal laws". **41-3**

P.O. Box [illegible]
Roundup, Montana 59072
406-323-1639

MDSL September 30, 1992 Page 2

Therefore, I am requesting removal of certain language regarding failure of the proposed mitigation plan which is found on pages iv, II-6, IV-20, IV-25, IV-32, IV-55, IV-85, IV-87 and IV-89. **41-3**

Sincerely,

Robert Ochsner

Robert E. Ochsner

REO/lgb

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September 30, 1992

RECEIVED
OCT 01 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva:

As a retired, life long resident of the Huntley community, I am totally opposed to the proposed Meridian coal load-out facility in Huntley. Since the public hearing held in Huntley on September 22, 1992 was not a question and answer session, perhaps you can answer some questions regarding the draft E.I.S.

1. Air Quality

In the last paragraph in Chapter III, Page III-6, the agency would lead readers to believe that monitoring was done at Huntley during the temporary load-out in 1989 and 1990. It is stated that the maximum 24-hour PM10 concentration was about 41ug/m3 with an annual average of about 14 gu/m3. Since no monitoring was done near the load-out site during that period, how can these figures be used as fact? **42-1**

In Chapter IV, Page IV-11, it stated that the maximum 24-hour PM10 concentration (37.6 ug/m3) resulting from the operation indicates that the degradation of air quality would occasionally exceed the allowable PSD increment by out 1.7 times, but PSD permit requirements would not be applicable because the estimated particulate emission would only be about 12 tons per year. Was the 12-ton emission figure also taken from the aforementioned non-existent monitors? **42-2** Through the duration of one load-out in 1990 there was enough emissions to nearly blot out the street lights. What should residents with respiratory problems do during the duration of this project if approval is given? **42-3**

2. Noise Levels

On Page IV-13 it is stated that a water spray system will be installed to minimize fugitive dust emissions. How can this system remain operable during freezing weather? On Page IV-42 it is stated that noise generated during the load-out operation **42-4**

7.0 (app 144)

Mike DaSilva
Montana Department of State Lands
September 30, 1992
Page Two

would be noticed by Huntley residents and would occasionally be above acceptable levels recommended by E.P.A. The noise noticed by Huntley residents is an under statement if I ever heard one. During the load-outs in 1990, the noise from dozers pushing coal onto the conveyor belt and train locomotives moving empty and full cars, blowing their whistle with each move, along with diesel exhaust and coal dust made it impossible to leave windows open during summer nights. It was also impossible to get a decent night's sleep even with windows closed. **42-5**

The agency admits that both air degradation and noise levels will exceed some standards, so how can they state that the impact to the Huntley community will be minor? **42-6**

3. Recreation

Page IV-51 states that recreation opportunities and quality in Huntley would be impacted from coal dust. Yet the agency concludes that impacts to recreation opportunities will be minor. Do you also conclude that breathing coal dust when exercising and doing every-day activities is a minor impact? **42-7**

In regard to the mis-quote by Tetra Tech which I mentioned at the public hearing on September 22,1992, the road that I referred to was not Heath Street but Old Highway 10 leading northeast out of Huntley. The other streets in that area of town, namely Date, Elm, Fir, Grape, Heath, Jute, 2nd North, and 3rd North, are all used for walking, jogging, biking, etc. **42-8**

4. Transportation

Throughout the entire section on transportation from the mine to Huntley, your findings indicate there will be more traffic accidents, trucks having difficulty negotiating turns at the intersection of Highway 87 North and Highway 312 East, the LOS reduction at the intersection of Heath Street and Highway 312 East, and at the entrance to the load-out site, the deterioration of the roads, especially Highway 312 East and Heath Street. **42-9**

Why wasn't there more consideration given to alternate haul routes away from already congested roads? There can be no dollar amount place on those that will die or be maimed due to the truck-related accidents caused by this needless haul route. 42-10

I can only hope that you will take the concerns as expressed by people of the Huntley community seriously and not permit the load-out facility to be placed in Huntley.

Sincerely,

James Pope Box 41 Huntley, MT. 59037
James V. Pope

cc: Dennis D. Casey, Commissioner

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(43)

September 16, 1992

RECEIVED
OCT 01 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva:

For the last seven years I have leased the Brown Ranch which consists of roughly 25 sections, and lays directly east of the designated life of mine area. I know water is one of the issues in the permitting process and I would like to comment on that subject.

I utilize a number of springs on the ranch to water livestock. Some are good, but many are not dependable and either dry up or freeze up at different times of the year. 43-1

I realize that the proposed mining operations could have an impact on some of these springs. After looking over the planned mitigation measures I'm not so sure that would not be a blessing. Anyone that says springs are a no maintenance dependable supply of water hasn't tried to utilize the majority of the springs in the Bull Mountains. Mitigation measures like horizontal drains, deeper wells, etc. would most likely give me a more dependable water supply. 43-2 From what I understand from the DEIS my wells are below where the coal is to be mined and in all probability will not be effected, although mitigation measures apply there also. I also have a hunch that after mining has occurred for a few years we will very possibly have more and/or larger springs than we have now.

I support Alternative #1 in the DEIS. Let's get the project going.

Sincerely,

[illegible]
Lessee: Brown Ranch

627.0
App 144

1673 Goulding Creek Road
Roundup, Mt. 59072
Sept. 29, 1992

(44)

RECEIVED
OCT 01 1992
STATE LANDS

Montana Dept of Lands
Enviromental Coordinator
Capital Station
Helena, Mt. 59620

Mike Desilva,

We support the Bull Mountain landowners association, an affiliate of the Northern plains Resource Council, in their list of minimum requirements for permitting the Bull Mountain Mine No. 1.

Photo copy of list is enclosed. Item no 3 is extremely important to us and other land owners in Broadview area, due to the destruction to land and ranch operation, causing lowering of property value, by the proposed railroad to Broadview. 44-1 Answer would be appreciated.

Sincerely
George and Eleanor Carlson

P.S we don't feel northern plains Railroad Co should destroy private owned agriculture land when meridean owns the milwalkee Rail bed. 44-2

627.0 app 144

Northern Plains Resource Council

The Bull Mountain Landowner's Association, an affiliate of the Northern Plains Resource Council (NPRC), feels there are serious problems with the permit application of Bull Mountain Mine No. 1 *as it is currently proposed.* In light of this fact we have developed a list of conditions we feel must be implemented if the mine is to be permitted. These conditions have the full support of NPRC.

MINIMUM REQUIREMENTS FOR PERMITTING THE BULL MOUNTAIN MINE NO. 1

1. Realistic bonding and a permanent trust fund to restore water resources likely to be disrupted by mine subsidence both on-site and down through tributary drainages.

2. Realistic bonding and a permanent trust fund to stabilize slopes and control subsidence-caused erosion

3. Disapproval of interim coal hauling to Huntley as a threat to public safety. Require coal transportation from the outset to be by conveyor, built down Halfbreed Creek to Roundup and then by a common carrier rail spur built from Roundup along the old Milwaukee right-of-way to the mainline at Cushman.

4. A state-of-the-art covered tipple for the coal loadout.

5. Formal notice given to interested parties on development and revisions of permit requirements.

Persons interested in adding their support for adoption and enforcement of these mine permit conditions please contact the Montana Department of State Lands, Capital Station, Helena 59620 or the NPRC office at (406) 248-1154.

Sincerely,

Jeanne Charter
Jeanne Charter
BMLOA Secretary/Treasurer

419 Stapleton Building Billings, MT 59101 (406) 248-1154

(45)

RECEIVED
OCT 01 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

September 24, 1992

Dear Mr. DaSilva:

I'm writing in response to the draft EIS released earlier this month by your office. Let me start by saying that I am 100 percent in favor of the Bull Mountain Mine Permit. I have been employed by Meridian Minerals in Roundup since April, 1989.

I cannot say enough about my work experience with Meridian. They are a super company to work for. They make promises to their employees and to the community and they follow through with them. Meridian helps make Roundup a better place to live through their many grants and donations. You have no idea how much and how many different organizations they support in this small town. Whenever possible, we buy supplies locally, and keep as much business as we can right here in town.

Meridian is more than willing to work with the community on any problems. If the local staff can't solve the problem all I have to do is call the Billings or Englewood office and someone else from the company flies in to help. Meridian is a caring company and shows genuine concern for their employees. I recently endured an extensive hospital stay and Meridian kept my job open for me. Meridian provided support at a time when I needed it more than ever. After working 10 years full time for the last company, I had a heart attack was off for a month, then got my hours cut, all benefits taken and when got down to twelve hours a week quit. It is wonderful to work in the caring, open environment Meridian provides. It has been over two years since I had bypass surgery and still working.

As of August 31, 1992, I have received 438 applications from Montana alone for the jobs this mine will bring. These jobs will provide the opportunity to keep our community alive and growing. I only hope others have the chance to experience what I have working with Meridian.

Sincerely

Jo Soennichsen

Johanna (Jo) Soennichsen

627.0 App 144

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OCT 01 1992
STATE LANDS

(46)

Please forward the enclosed letter to Mr DaSilva at the Dept of State Lands.

Thank You Very Much for your assistance

Sincerely, Al Landwehr

627.0 App 144

Sept. 25, 1992

Dear Mr. DaSilva,

My name is Al Landwehr, and I am currently employed by Western Energy at the RoseBud mine in Colstrip, Mt. I am a working man, employed as a serviceman/oiler for the mine.

I fully support the mining operation for the jobs it would create, and the revenue it would bring to the county, as well as the state of Montana.

The frivolous complaints of uninformed people are unwarranted, because regulations concerning the mining industry, being monitored by the Federal government, the State government, MSHA, and the EPA are so strict that the well being of the land, animals, air, water, the general public and the mine workers themselves will all remain environmentally sound.

I would very much like to see the Bull Mountains mining project proceed forth.

Thoughts and Comments of a Modern Day Miner.

Sincerely, Al Landwehr

GERALD BARTOW, President of Council
ELLEN LEE, Clerk/Treasurer
VIOLET OLSEN, Assistant Clerk
GARY THOMAS, Commissioner of Public Works
VICKI KNUDSEN, Attorney
ROBERT MIHALOVICH, Police Magistrate
DONALD PICCHIONI, Fire Chief

SALLY ARMSTRONG, Mayor

City of Roundup
Montana

ALDERMEN
LINDA GETCHELL, 1st Ward
JAMES SCHLADWEILER, 1st Ward
GERALD BARTOW, 2nd Ward
ERNIE SATTERTHWAIT, 2nd Ward
JOYCE BREWER, 3rd Ward
WILLIAM EDWARDS, 3rd Ward
WILLIAM FUNK, 4th Ward
BRUCE HOILAND, 4th Ward

(47)

September 16, 1992

RECEIVED
OCT 01 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva:

In the DEIS it is stated that "impacts to public sector fiscal conditions from mining - related activities would be minor and beneficial over the short term." Over the life of the mine I believe the economic benefits to the City of Roundup will be far from minor. Your assumptions on local hire ratios and how many workers will live where, are arbitrary to say the least. No one can give a definite answer as to who will live where or where they will come from. Simple logic tells me that 300 well paying secure jobs, fifteen miles from Roundup will have a dramatic positive effect as time goes along. It seems reasonable to assume that over time our proximity to the mine will encourage workers to live here and also aid in the logistics of the mine operation. 47-1

In a town with the stagnant economy we have endured for the last few years, any increase in the economy can be dramatic. Our taxable valuation has fallen to 1.5 million and remained there since 1988. We see nothing in the future to keep our valuation from continuing downward without this project.

Overtime, I believe this project will have a very strong beneficial impact on the economy and fiscal condition of the City of Roundup.

I urge you to approve Meridian Minerals proposal under Alternative 1.

Sincerely,

Ellen J. Lee

Ellen J. Lee
Clerk/Treasurer
City of Roundup

627.0 app 144

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(48)

September 30, 1992

RECEIVED
OCT 02 1992
STATE LANDS

Department of State Lands
Attn Mike DeSilva
Capitol Station
Helena, Montana 59620

Dear Sir:

We, the Musselshell County Republican Central Committee, do hereby go on record as being in favor of the Bull Mountain Mine #1 permit being granted.

Thank you.

Cordially yours

MUSSELSHELL COUNTY REPUBLICAN
CENTRAL COMMITTEE

Alan O. Evans, Chairman

627.0 app 144

Montana Department
of
Fish, Wildlife & Parks

RECEIVED
OCT 02 1992
STATE LANDS

(49)

Mike DaSilva, Environmental Specialist
Mt. Dept. of State Lands
Capitol Station
Helena, Mt 59620

September 30, 1992

Mr. DaSilva,

The following comments address the Draft Environmental Impact Statement (DEIS) for Meridian Minerals Company Bull Mountains Mine No. 1.

Technical Adequacy

1. Table III-3 and Appendix E, Table E-3-7. Who developed the criteria used to determine which springs were of "high, moderate and low" importance to wildlife? Who actually rated each spring? This information is important if one is to judge whether or not the system used will adequately protect wildlife values. 49-1

2. Page III-21, paragraph 3. In 1991 we harvested 43 elk in hunting district 590. Approximately 74% of the elk harvested in this hunting district came from the Bull Mountains. Although total counts or population estimates based on marked elk have not been made in recent years we do know that there are more elk now than when Dusek did his counts in 1978. There are a large number of elk wintering on the north side of the Bull Mountains at the confluence of Fattig Creek and the Musselshell River. 49-2

3. Page III-22 paragraph 1, 4, etc. Throughout the sections on wildlife and vegetation references are made to the "western portion of the area." When referring to the western portion of the area are you talking about the western portion of the life of mine area or the western portion of the area which also includes the railroad right-of-way? 49-3

4. Page III-44. One of the major recreational activities which takes place in this part of Montana is hunting. In 1991 4134 deer hunters alone generated 16521 hunter days of recreation in hunting district 590. Although elk hunting with a rifle is controlled by permit any individual can archery hunt and in 1991 130 elk hunters generated 871 hunter days. In 1991 762 turkey hunters in Musselshell county generated 2235 hunter days. The importance of hunter recreation to the local economy received little recognition in this document. 49-4 49-5

5. Page IV-51, paragraph 1. There is no evidence or data to support your conclusion that big game may relocate to state and federal lands and actually increase hunter opportunity. 49-6

627.0 app 144

(49)

6. Page A-50-51. The wildlife monitoring which will be conducted is fine but what will be done if there is degradation of habitats and populations of elk, deer and/or turkeys decline. 49-7

7. There is no mitigation proposed for loss of habitat due to subdivisions. 49-8

Mitigation and Conditions of Mining.

1. Meridian proposed mitigation measures for 42 of 130 existing springs and seeps which could be disrupted by the mine. For the remaining 88 water sources Meridian proposed that appropriate mitigation methods would be employed if monitoring indicated a problem. Identified below are those water sources which Meridian rated with a 3 or 4 for wildlife values in Table III-3 but did not offer mitigation in Table A-3. There should be a mitigation plan offered for the following springs and seeps: 52165 rating 4, 52275 rating 4, 52375 rating 3, 52455 rating 3, 53285, rating 3. In addition, there should be a mitigation plan for at least one water source per section throughout the area. 49-9

2. Page III-22, paragraph 5. There is a population of sage grouse. Does the railroad right-of-way impact any of the remaining sagebrush areas? If the right-of-way impacts any native vegetation, especially sagebrush, mitigation should be offered. 49-10

3. Page IV-51. Paragraph 2. "Reseeding of the railbed after construction would attract deer and elk." Is this an impact or a benefit? 49-11

4. Page A-48, paragraph 2. What is the justification for the number and size of rock piles being established in the reclaimed zones? 49-12

5. On page IV-4 it is stated that there will be 450 jobs created and that 75% of the people hired will be from the local area. Of the 25% that migrate into the area 7% will locate to rural Yellowstone County and 6% to rural Musselshell County. If those numbers are correct it is likely that there will not be a large impact to wildlife from increased subdivision. If the numbers are low, which testimony given on September 24, 1992 at Roundup would indicate, there will be a significant impact to wildlife from increased subdivision. That impact was partially recognized in this DEIS on page IV-30, "As human activities (e.g., mining subdivision) increased, elk would redistribute their activities for avoidance when possible. Spreading subdivision, and adding more people, dogs and livestock to adjacent elk habitat may have a far greater impact on elk 49-13

(49)

distribution than mining. When human activities increased to the point where adequate isolation for elk would be unavailable, elk numbers should decrease." Other species, including mule deer and bobcat, will also be impacted by increased human activity. 49-14

6. Appendix B. Cumulative effects. There are three major developments taking place in the Bulls which have or will have an affect on wildlife populations: logging, subdivision and mining. The DEIS did not acknowledge that a very large area in the Bulls has recently been logged and that there are numerous acres which will be logged in the near future. In the short term these timber sales will greatly reduce the availability of secure habitat in lands adjacent to the mine. A second cumulative impact which was not adequately discussed was the increase in building on 20 acre tracts and the increased potential for subdivision in the Bull Mountains. The document mentioned the Hidden Springs Subdivision but it failed to recognize the significance of habitat fragmentation in the Bulls and the impact to wildlife and hunter recreation from increased subdivision. A check of an outdated land ownership map for Musselshell County (1982) indicated a minimum of 35 sections have been subdivided in Halfbreed Creek, Goulding Creek, and around Roundup. In addition, there is a new Subdivision, Cedar Ridge, between Roundup and Billings, and land being sold in Goulding Creek. The cumulative effects of logging, subdivision and mining on species less tolerant of human disturbance such as elk, mule deer, and bobcat will likely result in a degradation of habitat and therefore a reduction in numbers of these species for the life of the mine. 49-15

Many of the mitigation procedures outlined in the DEIS were satisfactory and should help maintain wildlife populations. An impact which the mine will be partially responsible for and for which no mitigation was offered was subdivision. Subdivisions will have the most profound short and long term impact to wildlife and hunting recreation. The MDFWP would encourage Meridian to take the mitigation procedures proposed one step further and aggressively work to protect wildlife values and hunting heritage in the Bull Mountains. These values could be maintained by placing conservation easements on land owned by Meridian and additional ranches at the headwaters of Fattig, Rehder, Railroad and Pompey's Pillar Creeks. We would encourage Meridian to work with the MDFWP and local landowners to establish an area around the mine site which is protected from further subdivision and where the habitat might be enhanced for wildlife. 49-16

Sincerely,

Ray Berntsen

Ray Berntsen, Acting Supervisor
MT Dept Fish Wildlife & Parks, R-5

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(50)

RECEIVED
OCT 02 1992
STATE LANDS

To: Mr. Mike Desilva
Environmental Specialist
MT Dept. of State Lands
Helena, Montana 59620

From: Dennis Johnson
320 2nd Street West
Roundup, Montana 59072

September 29,1992

Dear Mr. Desilva,

Having been a lifetime resident of Klein and Roundup, Montana; being a property owner in Roundup and Musselshell County, having lived around Mining and Miners and near Klein Mine, during times of full operation, I can tell you that, during those times, our wells did not dry up; nor did our quality of life suffer.

I feel, if the people living near the Mine Site can get solutions for their dust problems from Meridian, that any small change in our traffic and in the upper aquafers or in the aesthetic beauty of the Area,is much out weighed by the benefits and jobs.

I also want to thank you and all the people that put time, effort and study into this EIS. A JOB WELL DONE!!

Dennis Johnson

437 0 app 144

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(51)

YELLOWSTONE COUNTY WEED CONTROL
P.O BOX 35023
BILLINGS, MONTANA 59107-5023

(406) 256-2708
FAX (406) 256-2736

September 29, 1992

Mika Da Silva, Environmental Specialist
Montana Dept. of State Lands
Capital Station
Helena MT 59620

RECEIVED
OCT 02 1992
STATE LANDS

RE: BULL MOUNTAIN MINE WEED CONTROL

Dear Mr. Da Silva:

The Draft EIS and the public hearings of the Bull Mountain Mine #1 covered most of our concerns. However, with the growing noxious weed problem in Yellowstone County, (as well as the entire State), we would like to have the following added to the permit, and accepted by Meridian Mineral Company. 51-1

1. NOXIOUS WEED MANAGEMENT PLAN

A. A Noxious Weed Management Plan will be submitted to the Yellowstone County Weed Board and be updated on a yearly basis. This management plan would include:

The railroad spur.

The loading site in Huntley.

Any other site affecting Yellowstone County.

All control measures will be identified.

Chemicals and rates will be identified.

Date of application if chemical control.

Mapping of Noxious Weeds will be updated yearly.

Page #1:

7 0 app 144

(51)

PROPOSED BULL MOUNTAIN MINE #1:

2. RAILROAD CONSTRUCTION

A. All construction equipment will be steam cleaned just prior to taking it to the construction site.

B. Source of Road Bed Material.

Ballast must be steam cleaned to be noxious weed seed free, or come from a certified noxious weed seed free source.

Other fill materials will come from a noxious seed free source area.

C. Ties, rails and other hardware will be new, and the ties will come from a source certifying them noxious weed and noxious weed seed free. 51-1

3. HUNTLEY LOAD OUT SITE

A. All materials used will be noxious weed seed free.

B. All used machinery will be steam cleaned just prior to work.

4. NOXIOUS WEEDS IN CONSTRUCTION AREA

A. All noxious weeds in any construction area will be sprayed prior to any construction.

RECLAMATION

1. All reclamation needing mulch or straw will be noxious weed seed free.

Page #2:

(51)

2. All seed will be noxious weed seed free.
3. All equipment used for reclamation work will be steam cleaned just prior to moving to site.
4. Control of noxious weeds on abandoned rail bed and other rights of way will be in effect for a minimum of ten years.
5. We will require a noxious weed bond of a minimum of twenty thousand dollars ($20,000.00) which will be held for a period of ten years after reclamation has ended.
6. A representative of the Yellowstone County Weed Board will inspect all sites at the end of reclamation and at also immediately prior to bond release time.

Prevention is a major key to our program. Any time we can prevent an infestation from becoming established we are all much further ahead. 51-1

Sincerely,

Ed Kirby
ED KIRBY, WEED SUPERVISOR
County Surveyor's Office

EK/jlv

pc: file

LAVE\WEED\BULLMTN.DOC

Page #3:

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(52)

Alan Olson
18 Halfbreed Creek Road
Roundup, Montana 59072

RECEIVED
OCT 02 1992
STATE LANDS

September 21, 1992

Mr. Mike DeSilva
Montana Department of State Lands
Capital Station
Helena, Montana 50620

Dear Sir;

I am writing in regards to Meridian Minerals mine permit for the Bull Mountain Mine #1. As a resident of the Bull Mountains, and *not* a member of the Bull Mountains Land Owners Association, I would encourage you to grant Meridian Minerals the permit they are seeking.

For an individual to say they have no concerns as to possible hydrological damage from this mining project is to say they are not well informed. However the mitigation plans worked out between the DSL and Meridian on possible hydrological impact and mine reclamation as proposed in the draft EIS go a long way towards relieving any concerns I may have had. In the past, while working for a major oil field service company, I have worked for Meridian on numerous projects and I have seen few companies as dedicated to environmental concerns as this company . Meridian consistently exceeded the norm. As for the people in your department, they have always been forthright, honest, impartial, and although we don't always agree, a pleasure to work with.

I am looking forward to your department approving this permit as soon as possible. Thank you.

Sincerely,

Alan Olson

Alan Olson

627.0 app 144

(53)

Box 553
Roundup, Montana 59072
October 1, 1992

Mike DaSelva
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

RECEIVED
OCT 05 1992
STATE LANDS

Dear Mr. DaSelva,

Since the initial phone survey of local opinion regarding
Meridian mining in Bull Mountains I have been opposed
to this operation and I feel the E.I.S, which was quite a
fantastic report, reinforces my fears that this mine is harmful
to flora, fauna, water sources, and residents of the region. I am
one of those who will be directly affected since my small ranch
borders Pete and Ronda Tully's place to the north.

At the recent Roundup meeting I was heartened by the group
from Huntley who were very dubious of Meridian's measures
to safeguard the quality of life in their community and who
were unwilling to sacrifice the present lifestyle and safety of
even a few for the sake of economic benefits that *might* be
forthcoming. Would that my own community of Roundup
were as farsighted! Many here are willing to sacrifice long time
residents, air and water quality, etc. on the *gamble* that (a)
Meridian will bring about a 30 year economic boom (b) that
Roundup will benefit by that financial life saver (c) that Meridian
cares about the community and its residents.

Presupposing I and the rest of the "mini-farmers" or
tract residents can afford hydrological studies of our water
sources and chemical analysis of the water at these sources,
I hope and beg that you will insist that Meridian deposit 53-1
sufficient funds to restore our water. I realize I will have
to underwrite the initial costs mentioned above plus
additional expense of lodging an official complaint against

(2)

this company. Frankly I don't know if I can afford to
take the necessary steps but I plan to be protected even if I
have to borrow the money. Unfortunately many of my
neighbors will not be able to take these measures and will
be forced to depend on you to have their best interests in
mind when putting restrictions/procedures on Meridian.

I seriously doubt Meridian's claims that they can
stabilize slopes, control erosion, and re-claim disturbed top
soil. In a test pit area several miles west of me Consolidated 53-2
Coal attempted a similar reclamation with unsatisfactory
results and gave up their mining of the area as a result.

Thirdly, as a teacher, it disturbs me to have
children waiting along the roads at bus stops and on
buses with coal trucks hindered by icy roads, falling 53-3
snow, darkness, fog, dust, etc passing every few
minutes endangering these youngsters. Why are we
putting these kids at risk? If Meridian has the right to
mine, then they should slurry the coal to the railroad 53-4
or build their own roads. The railroad spur is a serious invasion
of local ranchers and shouldn't even be considered.

After listening to the glowing testimony Meridian elicited at
the meeting, I hope you will also realize that this company sent
a p.r. person here to court "key" figures, leading many to believe he
and others would not only be permanent community members but a
generous source of jobs and economic favors. Anyone who expressed
concern or opposition was intimidated or censured. Meridian
refused to buy a $15 ad in our school tournament booklets (- maybe 53-5
because I was the sponsor). They cancelled leases Tullys had for
three decades and gave them to neighbors which has resulted
in hurt feelings, an unnecessary strike at Tullys (who are fine
stewards of the land), and an influx of cattle from far & wide onto
the leases which have, at times, wandered onto my place bringing
a disruption to my operation which I never experienced with
the Tullys

(3)

For 20 years my home and 300 acres have been my investment for my retirement years which will begin soon. I hope you and your bureau will safeguard not only my future but the legacy I have built to pass on to the next generation and generations to come. Don't sacrifice Montanans for a company that has sworn to ruin this state.

Yours truly,

Mary J. Brown

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(54)

RECEIVED
OCT 05 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

September 25, 1992

Dear Mr. DaSilva:

We the undersigned are taking this opportunity to express our support for the Meridian Minerals Bull Mountains Coal Mine and urge acceptance of the draft Environmental Impact Statement (EIS) for the project.

According to the EIS (pages III-33), Musselshell County lost 162 jobs in mining between 1980 and 1989. The Bull Mountains Coal Mine will bring those high paying jobs back to our area. They are sorely needed. We still have an unemployment rate of nearly 8% and we need a 30-year project like this so that our community has a future to offer our children.

We agree with the EIS with regard to the ability of this area to accommodate the impact the project will have on housing, water and sewage systems and schools. We look forward to the growth the Bull Mountains Coal Mine will mean to our community. We know we can handle it.

We also know that the non-mine businesses in our community will be benefitting greatly from mine-related business -- supplies and services in particular.

Thank you for your attention, We appreciate your consideration of this project and, again, strongly urge acceptance of the draft EIS.

Sincerely,

	NAME	ADDRESS
1	[illegible]	Roundup, Mt.
2	[illegible]	Roundup
3	[illegible]	Roundup
4	[illegible]	Billings Montana
5	Virgil R McHenry	Roundup

CONTINUE NEXT PAGE

Total of 543 signatures

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(55)

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES

WATER QUALITY BUREAU

Room A-206

STAN STEPHENS, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

Phone (406) 444-2459
Fax (406) 444-1374

HELENA, MONTANA 59620

October 5, 1992

RECEIVED
OCT 05 1992
RECLAMATION DIVISION

Mike DaSilva
Environmental Specialist
Mt Dept. of State Lands
Capital Station
Helena, MT 59620

Dear Mr DaSilva:

I have the following comments on the draft EIS for the Meridian Minerals Company Bull Mountain Mine No. 1. From a hydrology/water quality perspective the draft EIS is rather general and indefinite. Our comments are listed below.

Page #	Comment	
IV-17	In the discussion of impacts to ground and surface water, dewatering is mentioned but I have been unable to find in the draft a discussion of where the dewatering water goes.	55-1
	Also in this section the potential drawdown in five years is stated as "could be less than 2 miles". What will it likely be in forty years?	55-2
	Also in this section it is stated that after mining water will discharge to PM Draw. Where does this draw discharge to?	55-3
IV-21	The statement in the third paragraph on this page that "subsidence is not predicted to have a very large impact on concentrations of inorganic constituents" is not supported in the cited reference by Thompson. Thompson (1982) concluded that an average dissolved solids concentration of 3,100 mg/L would result in underground mine spoils water. This is 2.6 to 2.7 times the existing dissolved solids concentrations given for springs, alluvial ground water, and deep overburden groundwater given on page III-16.	55-4
	This section does not discuss the impacts to ground and surface water quality from the mine dewatering operation. Where will the pumped water be placed? What will its quality be? How will it affect the quality of receiving waters?	55-5 55-6 55-7
IV-22	In the first full Paragraph on this page it is stated that "The quality of surface and ground down-gradient from the coal preparation operations could be affected by the discharge of the brackish water pumped from the Madison Formation." This affect should be analyzed. What is the quality of the "brackish" water pumped from the Madison Formation? How will the quality of this water be affected by the preparation process? What is the discharge water quality? At what rate will it be released into the surrounding environment? How will the discharge affect receiving ground or surface waters?	55-8 55-9 55-10 55-11
IV-23	Section d. does not analyze the impacts to State Waters resulting from percolation through the waste disposal area. What are the chemical and physical properties of the waste and what constituents are likely to be mobilized by percolating water? Where will discharge from the rock drains beneath the waste disposal area go? What are the impacts? How long will they persist?	55-12 55-13 55-14
A-10	What will be the impacts to ground water from discharges through "weep holes" in sedimentation ponds?	55-15

"AN EQUAL OPPORTUNITY EMPLOYER"

GENERAL COMMENTS

The primary municipal water source for the town of Roundup is an abandoned coal mine adjacent to the Musselshell River valley. A pump test of the Jeffary mine in 1989 demonstrated a hydrologic connection between this mine and overlying Fort Union aquifers (DNRC files undated). The EIS does not address the potential long term impacts of mining up-gradient Fort Union coal on this municipal water supply. This deficiency cannot be justified by the agency's arbitrary "geographical limits for the analysis" as stated on page IV-3. The potential long term impacts of mining on the municipal water source should be assessed. 55-16

On page III-18 water quality regulations are discussed. This discussion refers to national secondary drinking water standards. Please note that these are not mandatory levels. 55-17

It appears that this operation will have both a public water supply and a public waste water treatment system. Thus, these systems will require approval from the appropriate authorities. 55-18

It should also be noted that the storm water ponds will require storm water permits from the Department of Health and Environmental Sciences. In fact, if any water other than storm water is placed in these ponds a MPDES permit from the Department will be required. 55-19

Thank you for the opportunity to comment.

Sincerely,

Abe Horpestad

Abe Horpestad Ph.D.
Water Quality Bureau
Environmental Sciences Division

56

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Montana State Office
222 North 32nd Street
P.O. Box 36800
Billings, Montana 59107-6800

IN REPLY TO:

3460 (921)

October 5, 1992

RECEIVED
OCT 06 1992
STATE LANDS

Mr. Mike DeSilva
Environmental Scientist
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. DeSilva:

Personnel in the BLM Branch of Solid Minerals, Montana State Office and the Miles City District Office have reviewed the Bull Mountains Mine No. 1 Draft Environmental Impact Statement. The following are Montana BLM's comments.

Preface: Apparently, Appendix F was changed to Chapter VIII, although the preface was not changed to reflect this. 56- 1

Pages iii and I-1: Disturbed acre figures discussed in the summary on Pages iii and I-1 are not entirely in agreement. 56- 2

Pages iii, I-4 and I-5 (Figure 1-3): Acres of Federal coal identified on Pages iii (paragraph 5) and I-4 (paragraph 1) do not agree with the map (Figure 1-3) on Page I-5. 56- 3

Page I-7, Table I-3: *Temporary jobs.

Page I-10, Paragraph 3: Only those tracts being considered for the Powder River Round I sale were addressed in the EIS. The Socio-Economic Supplemental EIS only addressed tracts in Montana. 56- 4

Page II-3, Paragraph 1: The statement in the EIS concerning Meridian lease status is correct, but should be expanded upon for clarification. 56-5

Page III-13, Paragraph 1: A portion of the Rehder Creek was identified as unsuitable for mining due to floodplains and potential alluvial valley floors in the Bull Mountains Exchange analysis. (T6N, R27E, sec. 18, N1/2, N1/2 - 24.5 acres.) 56-6

Page III-13, Paragraph 3: Since Madison water is being proposed for use, its quality should be addressed here. 56- 7

627.0 app 144

Page III - 25: A figure (map) would be helpful. 56-7a

Page IV-15, Last Paragraph: Why are the State parcels treated differently? Should the entire railbed be reclaimed? 56- 8

Page IV-16, Paragraph 2: Stockpiles of material should be seeded to prevent excessive erosion, and to enhance the retention of soil productivity. 56- 9

Page IV-22, Continued from Page IV-21: Why are these wells being plugged and sealed? 56-10

Page V-22, Paragraph 1: The EIS states that water from the Madison Formation is brackish. Is the Madison water naturally brackish, or is it made brackish by use? Why would brackish water not be treated instead of simply being discharged to surface and ground water? Mitigation strategies are not discussed. 56-11

Page IV-26, Last Paragraph: Upon conclusion of rail use, the base grade should be smoothed, shaped, and reclaimed in a manner to best fit with adjacent land use. Wherever reseeding is necessary, raw soil should be mulched to enhance erosion abatement and assist plant establishment. 56-12

Page IV-27, Paragraph 2: Disturbed areas must be managed to avoid establishment of noxious weeks. This should be a requirement of the permitting process. 56-13

Page IV-28: What are the impacts to wildlife from mine-related truck and train traffic? 56-14

Page IV-41, Paragraph 3:

The last sentence reads, "Truck hauling would be temporary during a 2- to 3-year period, after which noise levels would return to previous levels." The word "temporary" is somewhat misleading where it is used in this sentence. During this 2-year period, trucks from the mine will have to be making the run from the mine to the Huntley loadout facility 24 hours per day. 56-15

Page IV-53, Paragraph 2: Are there existing buildings that are located in the areas of subsidence? 56-16

Page V-2: Should the Office of Surface Mining be included on the consultation list? 56-17

Page V-4, Paragraph 3: Why is it assumed that the permit application package is in compliance here and Chapter IV? Is there a question whether the application meets applicable State and Federal laws? 56-18

Appendix A, Page 33, Part 4: After topsoil emplacement, the material will be analyzed to determine that no unsuitable material was used. The analyses would be performed on the saturated paste extract. Not all suitability criteria can be determined using a paste extract. Carbonaceous material and acid forming material, as mentioned above, will require other methods of analysis to determine suitability as topsoil. 56-19

Appendix A, Page 39: If water is piped from a spring to create a wetland elsewhere, wouldn't this reduce the size, or eliminate, the wetland at the spring and defeat the purpose of the mitigation? 56-20

Appendix C, Page C-14, Paragraph 2:

Reference is made to a strain criterion recommended by Messrs. Singh and Bhattacharya. It would be extremely helpful to the reader if this criterion would be defined and otherwise explained how it was applied to the specifics of this case. 56-21

Appendix D, Page D-4, Paragraph 3: The list of BLM offices referred to in Chapter I cannot be found. 56-22

Appendix E, Page 11, Table 2 Heading: Relative is misspelled. 56-23

There does not appear to be any discussion regarding Threatened or Endangered Species. 56-24

Thank you for this opportunity to review and provide comments on this important document.

Sincerely,

Francis R Cherry Jr

Francis R. Cherry, Jr.
Associate State Director

57

Montana Department
of Transportation

2701 Prospect Avenue
Helena MT 59620-9726

Stan Stephens, Governor

October 5, 1992

RECEIVED
OCT 05 1992
STATE LANDS

Mike Dasilva
Montana Department of State Lands
Capitol Station
1625 11th Avenue
Helena, MT 59620

Subject: Draft EIS - Bull Mountain Mine

Thank you for the opportunity to review the draft EIS.

All of the issues that we had previously addressed as potential conflicts or issues of concern were properly identified in the EIS. However, there are still three major issues that are actively being negotiated with the applicant, that we are hopeful will be resolved before the issuance of any permit. We realize that these are mitigation measures that need to be resolved between the applicant and the MDOT, however are being identified as yet unresolved issues.

As stewards of Public Transportation, we feel that it is in the public's best interest that these three major issues are satisfactorily resolved.

(1.) Repair of 312 after the trucks quit hauling coal to Huntley.

As stated previously, there are no funds earmarked for this route once the pavement damage has occurred and the applicant begins hauling the coal by rail. We are currently negotiating with the applicant and hopefully some mitigation measures can be agreed upon. 57-1

(2.) Proposed At-Grade crossing just south of Broadview on Montana Route 3.

Montana Route 3 will be one of the major routes between Great Falls and Billings and will be on the final composite listing of routes identified as National Highway System (NHS) routes. 57-2

Possible delays of traffic, proper protection for the crossing, and possible future developments that may warrant a railroad overpass are currently being negotiated.

(3.) A proposed grade separation on Highway 87 N. is also under evaluation for similar concerns as those mentioned in item number two and includes maintenance considerations. 57-3

Sincerely,

Don W. Cromer

Don W. Cromer, Supervisor
Statewide Planning

cc: Roy Vantura
Billings District Engineer
Sandra Straehl
Bureau Chief, Highway Planning
Rail and Transit Division - Helena
Utility Section - Halana

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(58)

PO Box 37. Huntley MT 59037 406-348-2079

RECEIVED
OCT 06 1992
STATE LANDS

October 5, 1992

Dennis Casoy, Commissioner
Mike DaSilvo, Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT, BULL MOUNTAINS MINE NO. 1 AN
ASSOCIATED FACILITIES.

Dear Mr. Cosey & Mr. DaSilvo:

I realize I have given you probably more than my fair share of commen but this is an issue that not only affects "me" but the people of this community and my children and grandchildren.

Therefore I do have some other points to bring up on this document and what I feel are serious non-compliance with regulatory mandates of both the NEPA process but also the MEPA process.

I will again state the NEPA Regulations I feel that you have not adequately addresses:

1. 1502.14 Alternatives including the proposed action. On affected Environment and the Environmental Consequences, it should present the environmental impacts of their proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. In this section agencies shall:

(a) rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) include reasonable alternatives not within the jurisdiction of the lead agency. 58-1

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives. 58-1

Under 1502.16 Environmental Consequences: States "It shall include discussions of:

(a) Direct effects and their significance (1508.8)
(b) Indirect Effects and their significance (1506.8) 58-2

Under 1502.24 Methodology and scientific accuracy. It clearly states: "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in EIS.

Under MEPA I feel these regulations apply to alternatives sites and siting.

26. 2. 642 Definitions: (2) (a) Alternative' means:

(i) An alternate approach or course of action that would appreciable accomplish the same objectives or results as the proposed action.

(ii) Design parameters, mitigation, or controls other than those incorporated into a proposed action by an applicant.

(b) The agency is required to consider only alternatives that are realistic, technologically available, and that represent a course of action that bears a logical relationship to the proposal being evaluated. 58-3

I feel that ALL ALTERNATIVES PRESENTED TO DSL ARE ALL OF THEE ABOVE.

Under 26. 2. 642 (7) Cumulative impact' means the collective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location.

Now there seems to be some confusion for MS Lovoloco on what is "Human Environment" so in this same section under # 12 it states: 58-4

"Human Environment includes, but is not limited to biological, physical, social, economic, cultural, and aesthetic factors that interrelate to or from the environment. Economic and social impacts do not by themselves require and EIS. However, whenever and EIS is prepared, economic and social impacts and their relationship to biological, physical, cultural and aesthetic impacts must be discussed.

Under 26. 2. 6642 (16) Secondary impact' means a further impact to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action. 58-5

Under 26. 2. 643 General Requirements of the Environmental Review Process Section 75-1-201 requires state agencies to integrate use of the natural and social sciences and the environmental design arts in planning and in decision making, and to prepare a detailed statement (EIS) on each proposal for projects, significantly affecting the quality of the human environment. 58-6

Part of the problem to date may be the fact that only a scoping was done and that an Environmental Assessment was not done before a draft EIS was prepared.

Within the EA process 26.2.643 (b) evaluation of "reasonable" alternatives is to be made as part of the proposed action. (d) to ensure the fullest appropriate opportunity for public review and comment on proposed actions, including alternatives and planned mitigation.

Under 26.2649 Preparation and contents of draft environmental impact statement:

(5) an analysis of reasonable alternatives to the proposed action, including the alternative of no action and other reasonable alternatives that may or may not be within the jurisdiction of the agency to implement.

(6) an explanation of the tradeoffs among the reasonable alternatives.

Section 10 part (e) a summary list of source materials used in the preparation of the draft EIS.

I'm hoping by now that you are getting the message that you should have either put out and EA with several sites for the load-out facility to the public for comment and consideration; with not only the facility listed, but also the tradeoffs and mitigation that should have taken 58-7 place or could take place for each site.

Not only me but the Community of Huntley has requested numerous times that alternate sites be looked at and evaluated by MDSL, and all to no avail.

DSL has stuck with the facts and figures and a one day whirlwind trip with the members of the company for which they were writing this document and a member of Gen Research. No one was asked from the Huntley Community to participate in this trip.

So I would like to take some facts and figures given to DSL from Meridian Minerals dated April 5, 1991; over a year & half ago on 13 alternate sites.

In going though these figures and checking out the sites of both Huntley and Coor site (Highway 312) near Huntley we have found discrepancies.

For one thing at the Coors site which in a letter dated January 31, 1992, Gen Research, it clearly states that the Coors Site is not at the Coors Elevator but a 1/4 mile from proposed load out site at Huntley.

If this is true then there is no 3 phase power to this site, there is no well at 85' ft and no city water. In checking with the Power Company the 3 phase power line ends at road 3 and a power company canont build a power line across a railline. The siding on the south of the tracks will hold 115 cars as this siding goes all the way back into Huntley. The North side of the tracks where the Load out is proposed to be placed will only hold 29 cars. In these same sheets of comparisons MM lists the travel miles at 41.1 to Huntley Loadout and 41.9 to coors (hwy 312) site. Yet operation miles for RR to Laurel is listed 24.5 from Huntley Loadout and 28. from Coors site. Why the extra mileage on the RR line? 58-7

In total estimated Capitol outlays under "Track Costs", under Cushman, shown in letter dated Jan. 31, 1992 they would have to build 2300 ft of track, the cost would be $435,000 and yet at the Coors site where there is enough track to hold all the cars on the south side of the tracks it will cost them $740,000 to build tracks that are all ready there?

All of these figures need to check and cross checked.

Under "Equipment" all figures are $150,000. Is this for state of the art equipment or what Meridian though they could get away with in providing for the same load out facility they had put forth when they were doing the test run?

I would like a set of cost figures for the test pit run and equipment projections. No where in the Draft EIS do we get a comprehensive list of equipment costs with all new equipment projected.

Under "Highway" which I take to be road costs or maintenance, they list $80,000 for both Huntley and Coors (312). The Coors site is across the tracks to the South and would require a road being built and railroad crossing. Still the road costs are the SAME?

Under "Stockpile" the cost is $15,000 at Huntley which is all ready and "industrial site" (quote from DEIS) and yet the land at Coors would need to be made into an industrial site the cost figures are only $5,000 more.

Under "Generator" and I for one would like to know why they need one and what will it be used for, the list a price of $15,000 for one in Huntley and yet a 1/4 mile away they will spend $20,000. ??? 58-7

The total capital summary is rather interesting in there figures. Cushman which they are saying is the farthest to haul too, must have a bed made for stockpiling, all equipment placed and some track built is only showing a difference in price tag to the Coors site of $95,000.

This whole process is up for question and my assumptions are that DSL was and is willing to live with clearly fictitious figures provided to them. DSL is clearly in violation of all the above stated regulations on this issue and has done a great disservice to not only the people of Huntley but the State of Montana.

On water issues for these same figures, WHY??? use figures for wells of 85 ft when Meridian all ready had a well at 20 ft.

A second point is the approval or disapproval for the Federal Surface Use Permit. Why is this needed and WHOM will be the agency issuing this permit? My interpretation of this is that because you are requesting one from a federal agency YOU ARE required to use NEPA Regulations. Also, because this 5 year plan will mine federal owned land you are doubly required to use NEPA. 58-8

The other is that I'm awfully uncomfortable knowing that the only agency that would be monitoring this mine will be DSL, mining division. An agency that has never had to deal with this process, has no rules or reg's governing it and is highly over worked all ready.

The DSL did not address a full range of alternatives under the NEPA 58-9

process nor MEPA for that matter and is negligent in its collection of data for these alternate sites. 58-9

I therefore must state again that I disapprove of a Montana 5-year permit to mine coal, (2) a MT land use agreement for mine
1 Successive amendments of the Montana permit to mine coal, (2) a MT coal lease (3) a federal permit to mine coal, and (4) a federal surface use permit.

Sincerely,

Nicol Price

Nicol Price

Enclosure: For your reading "Environmental Impact Assessment Review" published in affiliation with the Center for Technology, Policy and Industrial Development, Massachusetts Institute of Technology. Vol 8, # 3, Sept. 1988

Hearing Sept 23
Nicol

Dennis Casey, Commissioner
Mike Dasilva, Environmental Specialist
MT Dept of State Lands
Capitol Station
Helena, MT 59620

Comments on the Draft EIS for Meridian Minerals Bull Mountains Mine No 1 and Huntley Load-Out Facility for Public Hearing Sept. 23, 1992

I would like to thank State Lands for holding these public hearings and giving all of us a chance to speak. I spoke at the hearing last night in Huntley on Noise Pollution and the Huntley Load Out Site and its non-analysis. Tonight I would like to address the Social and Economic Impacts to Huntley and the Surrounding Area and the Tax and Fiscal Responsibility of this Project. I would also like to add some mitigative measures for this project.

First off, last night we discussed the Regulations that govern an EIS and what that entails. Since I don't have a copy of all the MEPA regs I will use the NEPA regs. Which I'm told are very similar.

I do not feel this EIS follows the regulation set forth in NEPA for these criteria.

1. Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.

2. Use all practicable means, to restore and enhance the quality of human environment and avoid or minimize any possible adverse affects of there actions upon the quality of the human environment.

3. Prepare analytic rather than encyclopedic environmental impact statements. Of which this document is.

Under NEPA 1502.14 (a) It states agencies shall: Rigorously explore and objectively evaluate ALL REASONABLE ALTERNATIVES, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(c) Include reasonable alternativee.

(e) Identify the agency's perferred alternatives or alternatives if one or more exists.

(f) Include appropriate mitigation measures not alreedy included in the proposed action or alternatives.

None of these have been done for this document. There are no analysis for the other load out sites, including Broadview, Acton, Roundup or Moesmain. A one day trip to look at all these various sites is not rigorously exploring information. There are no alternative routes shown and date to help tha public and the Commiseioner make a decision. There are no mitigative measures listed in this document for any of the impacts for the Huntley Site or Community.

In part 1502.14 (a) It atetee, and EIS shall include discusaions of (a) direct affects and their aignificanca and (b) indirect affects and their aignificance.

In the area of Social and Economic Impacts to the Huntley Community this is what is written:

A recent survay done in 1991 stated 90% of the reepondents were aware of the coal hauling and load out and 43% responded they were affected. It statea we value our quiet, rural environment with open spaces, cleen air and diversity of wildlife. Thats it! No where do you analysis the Quality of Life, the economic depresaion to the community, tha etrese to mental health, the impacts to the elderly who reeide here.

Under Visual Raeourcea/Aeathetics: It states the ecenic quality of this area has been aubatantially impacted by cultural modifications. What does that mean? That we have housea an a elevator? We still have the hills, river and farm ground we think of as special. A huge coal pile does not fit in with this scane.

In the area of taxation and fiscal responsibility thera is very little information but what is there is interesting

Coat to repair road 312 per yeer $38,654. the diesel fuel tax and GVW will total over a 2.5 yr $378,691. or $151,476. per year.

MM aeys payroll will be 10 million per yeer. 10M divided by 300 is $33,000. per year. This is a cheap work force aince decker and coal strip pay 35,000 to 65,000 per yeer.

Taxes paid by MM will be 9M of which museelshell Co will receive 1.2M to the County and $1.7M to the Schools. Yet projections sey moet people will reside in Billings or surrounding areas.

Billings share of the tax will be $20,000.

Yet in this Draft the cost of just fixing 312 will total 1.3M to 2.0M because of increased maintenance and operations coet. It statee that DSL conclude that impacts to tha public sector fiscal conditions from mining related impacts would be minor and beneficial. Does not picking up the tab for rebuilding 312 to the tune of 2M aeem more than minor?

I would like to offer aome mitigation proposals since none were printed or mentioned in this document.

1. That the Loed Out and Stock Pile be totally covered such as the fecility at the Absaroka mina on aarpy creek.

2. There be an eight hour work day at thie facility and truck hauling and rail car loeding be done from 8 to 5 each day; weekends off.

3. There be a small engine used to pull the care while being loaded.

4. The trucks used for hauling be of a distinct color, have governors on them eo apeed limits are obeyed end a phone number printed on the truck so if something does happen people could call.

5. A eignal light put at the intersection of 87 and 312 junction.

6. The 4% saverance tax that would be paid by Meridian be put into a special account eer-marked for the rapairs and maintenance of 312. Which would aqual $44,000. per yeer. Which over e three year period would aqual $132,000. Not nearly enough for a 2 million dollar repair bill to 312.

7. That Meridian purchase land in the Huntley area out of the housing development to build iteelf a road to use for hauling inatead of Heath Street.

8. That a yeerly review team be set up of etaff from DSL, MM and the Community of Huntley to review the permit each year and work out problems that mey arise. The Huntley Load Out would only be permitted for three years maximum.

Dennie Casey, Commissioner
Mike DaSilva, Environmental Specialist
Mt. Dept. of Stete Lands
Capitol Station
Helena, MT 59620

Commente on the Draft EIS for Meridian Minerals Bull Mountains Mine No. 1 and Huntley Load-Out Facility for Public Hearing Sept. 22, 1992.

First off I would like to Thank You for holding a hearing in Huntley, aomething that wae not scheduled during the scoping process. This Community and eurrounding area will, according to the Draft EIS be modarately to eignificant impacted in many negative ways, Coal Heuling on 312E, Coal Hauling down Heath Street, Hoise pollution, Dust Pollution, Quality of Life impacte and as far ae I could determine, this Community will not receiva any of the benefits, including tax dollars. Our Quality of life will be impacted eignificantly over a three year period OR LONGER, ao an industry that evidently must live on a shoe string budget can get on its feet, so to speak.

I would like to addresa both the Huntley Loed Out Facility and the Noise Pollution from this fecility.

Areae that I feel were not adequately addreesed in this Draft EIS is the considereble noiee pollution that will go along with this operetion. We liva in a QUIET Community. At night we can hear the trucke going down the Highway. The echo levels in this valley are high, because of the River and how we are aituated in tha hills. We sleep with our windows open in tha apring, aummer & fall, an on a very few nighte when alot of trains go through at one time, is the only time there is any noise. I requeet that you stay around after the meeting till the care are gone and listen to how Quiet it is.

NOISE POLLUTION

Hoise is listed in this document ae an unwanted, unpleasent eound. I consider the crashing of rallcare a noise, I consider the beeping of equipment when it backs up, noise, I conaider trucks gaaring down or up, Hoise. I conaider the augers rumbling, Noiee.

Yet in this document the noiee levels for equipment working at

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page 3-heering

HUNTLEY LOAD OUT FACILITY

I for ona am very disappointed to not see any new base line data on the other 4 propoeed aitee for the loed out facility. It appears to ae that the data used is atill the eame old figures aubmitted by Meridian Minerals Company in april of 1991. Why has not the Dept of Stete lande done ite own analysis of costs figures for at leeet four proposed sitee.

To bring the audience up to dete on whet the Huntley Load-out Fecility will be, here are some figures.

A coal stockpile, and 1/8 mile long, 200 ft wide and 25 ft high, (1.1 millioh tons), a 50-ton hoppered product bin, a medium capacity radial stacker using a 250 ft belt conveyor and flexible chute, a 375 foot reclaim tunnel, and a 25 ft by 100 ft belt conveyor and flexible chute, a mobile trailer for temporary office facilitiee. en axisting 20 ft well to furnish 30,000 gallone of rew water for equipment washdown, servica water for mechines and dust control, 115 car unit train with 5 engines and a caboose, a waste weter pit and a 8 ft high fence.

The Agency concludes that impacts to visual resources/aesthetics in Huntley from the Huntley loadout would be major and aignificant in the short term.

The analyeis that was done by Mike DaSilva in Jan. of 1992 lists the review team as, Bob Ochener, MM, Mike Dasilva, DSL, Anne Cosaitt, GeoReeearch. Sitee wera evaluated based on axiating site conditions and facilities, environmental and safety considerations and economic factors. Haul Route consideration were secondary, but costs of routa upgrading and haul distances were conaidared.

I look at thie as Human Life to be eecondary to economic fectore for Meridian Mines. Data used for figures were again the april 1991 correspondence of Meridian Mines.

Huntley is still listed as tha aost advantageous becauee it would cost MM only $135,000 to start up. In checking with equipment coapanies thay felt this figure wes low, unleae they planned to use surplus equipment. The other factor here is what waa MM planning to do as far as tha load out facility in april of 1991. I do not feel it is what is proposed in the dreft EIS to data.

The only disadvantagee listed is its reletively cloee to the town

page 4

of Huntley and within a quarter mile of a low development subdivision.

Now I would like to have you listen to other site evaluation.

Acton-disadvantages-located within Acton, there could be community impacts from the site. Residence and bar are located with the direction of prevailing winds.

Commanche-disadvantages-there may be some potential impacts on residences.

Broadview-disadvantages-Broadview school end the majority of the town population are located directly opposite tracks and in the prevailing wind direction.

Lavina-disadvantages-due to the proximity of the town, there is potential community impact.

Mossmain-advantages-there is sufficient siding, power and water available, the area is currently disturbed and used for stockpiling, the site is situated so that prevailing winds are not likely to impact residence. estimated cost $330,000. This does have the longest haul route.

Disadvangtages-this site is ferthest from the mine (52.1 miles to Huntleys 47) although almost all is on paved highway and interstate. Operational costs for truck hauling would be greatest at this site.

The Montana Dept of State Lands needs to address alternative sites with a more comprehensive analysis then has taken place here. Its still going along with "WHAT MERIDIAN WANTS! MERIDIAN GETS" and the people of Huntley and surrounding community can just learn to live with it.

You the Dept of State Lands need to do studies on Wind Direction for the Community of Huntley and NOT USE base line data from Billings. We are different.

You the Dept of State Lands need to do studies on the Buntley Water Supply and how our city wall will be effected by 30,000 gallons of water being pumped when the Community of Huntleys well only produces 18,000, and the law suit that was filed against Huntley on its well and the added cost to the Community water

page 5

users.

You the Dept of State Lands need to do studies on the Noise Pollution that will ingolf this Community throughout the 3 to 4 year period you are asking us to live with this facility.

You need to address all traffic that uses not only Heath Street but Northern Ave to the load out facility. I found no assessment of traffic coming from the east going west and a blind corner on heath street and northern ave.

The Social Impacts and survey done of this community should have been printed in this document along with a list of the people contacted. The survey was used to show that 90% of the people of Huntley were surveyed, but alot of people in the phone book that would be listed under Huntley are not Huntley Proper residents. Therefore your figure of 43% may be incorrect.

In every since of the word the beet facility in Huntley is only here from Oct to Jan. We don't consider that a big industrial site and truck hauling is maybe for only a month end the trucks for this come and go from the interstate not 312. In this document the industrial site is made to sound like we have both Billings Grain Terminal and Western Suger right in our backyard.

Therefore, I must add my voice of disapproval to the Montana 5-year permit to mine coal, a disapproval to the Montana Land Use Agreement for the operation of the Bull Mountain Mine No. 1 and its associated support facilities. A disapproval of successive amendments of the Montana permit to mine coal, a Montana coal lease, a federal permit to mine coal and a federal surface use permit for future life-of-mine development.

I also feel that part japanese ownership of this mine needs to be addressed to its consequences to the Montana Coal Industry and what effect this would have on the railroad spur.

Sincerely,
Nicol Price
Nicol Price
member of the Huntley Community Club/Environmental Committee

10-5-92

(59)

Dennis Casey, Commissioner
Mike DaSilva, Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

RECEIVED
OCT 06 1992
STATE LANDS

I disapprove of the proposed mining plan outlined in the Draft E.I.S. for Bull Mtns Mine No 1, dated August 31, 1992 as it does not comply with the following applicable law and regulation:

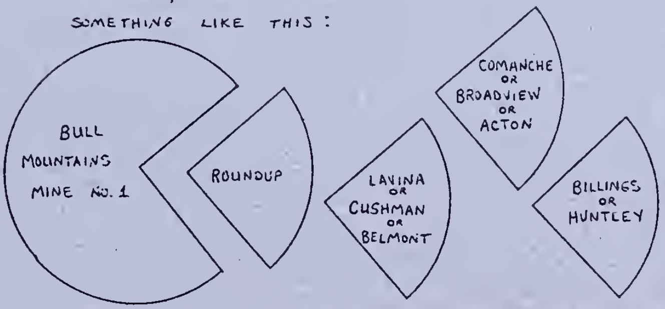
MEPA Regulation 26.2.647 II Prep. and Contents of Draft EIS
"If required by these rules, the agency shall prepare a D.E.I.S. using an interdisciplinary approach and containing the following" Sub. Section (5) an analysis of reasonable alternatives to the proposed action, including the alternative of no action and other reasonable alternatives that may or may not be within the jurisdiction of the agency to implement, if any;

I interpret the D.E.I.S. as including the Huntley location for the loadout as the proposed action, Alternative 2 as no action and find no detailed analysis of any other reasonable alternatives.

Page II-4 of D.E.I.S., paragraph 3, reads that "increased costs and environmental impacts" were determined to be excessive and unreasonable when compared to the Huntley site. 59-1

I feel DSL should have included facts and figures supporting their descision not to investigate alternate sites. This information could then be compared to the proposed site and an informed decision could be made.

As I see it, a big part of the pie is missing. Had DSL prepared the D.E.I.S as required, the proposed plan would look something like this:


Bull Mountains Mine No. 1
Roundup
Lavina or Cushman or Belmont
Comanche or Broadview or Acton
Billings or Huntley

Impact topics which should have been researched and gathered by DSL, not Meridian, should include Air Quality, Soils, Geographic Resources, Topography, Hydrology, Vegetation, Wildlife, Transportation, Noise, Socioeconomics, Recreation, Land Use, Cultural resources and Visual Resources/aesthetics. "Increased Costs" should not be regarded as an Impact Topic. 59-1

Sincerely, Kimberly Mueller

(60)

Medicine Wheel Alliance/Associated
With Northern Cheyenne Cultural Commission

PO Box 37, Huntley, MT 59037 406-348-2079-nicol
PO Box 763, Lame Deer, MT 59043 477-6215-tallbull

October 5, 1992

RECEIVED
OCT 06 1992
STATE LANDS

Dennis Casey, Commissioner
Mike DaSilva, Environmental Speicalist
MT Dept of State Lands
Capitol Station
Helena, MT 59620

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR MERIDIAN MINERALS BULL MOUNTAIN NO 1 AND ASSOCIATED LOAD OUT FACILITIES.

Dear Mr. Casey & Mr. DeSilva:

I would like to address the cultural resource part of the DEIS on behalf of Board Members and Tribes. Bill Tallbull, Northern Cheyenne, John Hill, Sr. Crow, Haman Wise, Sr., Shoshone, Floyd Youngman, Fort Peck Sioux & Phillip Underbaggage, Pine Ridge Sioux.

I would like to address the mining underground of coal and a Traditional Elders viewpoint on this matter.

Mother Earth is a power in itself-ALL ONE. Just because mining takes place under ground it does not negate the consequences of harm to the people. The deeper you go the more damage you do.

To probe into Mother Earth is disturbing the always quiet spiritual environment. The quiet waters underneath should not be disturbed, also. The deep earth is the quiet zone. Those spirits that shun the sunlight and thunder always remain in this under ground environment. The noises of the upper earth are apart from the quietness underneath.

Water from this quiet waters area has special life giving properties.

The watermakers select the place of springs. Many offerings and gifts are given to these watermakers.

Those who probe the earth and probe the sky and oceans are usually the ones who tread anywhere and touch everything, be

page 2

cause they hold nothing sacred. These people have trampled the sacred areas and touched these things that are not to be touched. These people do not carry a prayer and a prayer maker to the universe for all that is sacred. 60-1

It is our belief that the spirits of animals who have died and are now extinct reside spiritually in hills and mountains and underwater for those animals that were water animals. The vision quester of today and yesterday are visited by the animal spirits that come from hills, mountains, lakes & prairies. The sprit world is a vast unseen world and we have had and still do have a spiritual relationship with it; since the beginning of man.

The deeper one goes into the earth the more damage that is done as you are disturbing layers & layers of Quietness. Quiet waters, Quiet Earth, Quiet Spirit life. You are messing with something and are releasing sickness out into the world by the disturbance of the spirit life that dwells within.

We hope this helps you understand our concern for this mine and its effects upon the Indian Peoples of this Nation.

We have never had to deal with the subsidence of pictographs before. These are areas where spirits dwell and are considered sacred areas. To let these just fall into the earth is very disturbing to us. 60-2

Your mitigation procedures are all of a scientific nature and are not taking into concern Native American input into how these things might be handled. 60-3

We do realize that up until two weeks ago Sherri Deaver and Ethnoscience were still collecting data from Tribes and we do know the Shoshone have not been in yet and so we are surprised that you can make any judgements. 60-4

To say that the impacts to Native Americans from mining related activities would be minor and permanent, is and understatement and there needs to be more input in this area from your contacted help and Native Americans.

You are disturbing spirits which will be permanently destroyed and these cannot be replaced.

Therefore the Indian People of this group must disapprove of

page 3

this project and (1) a MT 5-year permit to mine coal, and (2) a MT land use agreement being requested by Meridian Minerals Company for the construction and operation of the Bull Mountains mine # 1 and its associated support facilities.

In addition, disapproval of (1) successive amendments of the Montana permit to mine coal, (2) a MT coal lease, (3) a federal permit to mine coal, and (4) a federal surface use permit.

We thank you for giving us the opportunity to address this issue and look forward to being part of any programmatic agreement reached between, DSL, MM and MT SHPO.

Sincerely,

Nicol Price

Nicol Price
Coordinator

The Board Members of MWA feel this information is confidential and should not be printed for people review.

(60-A)

Medicine Wheel Alliance/Associated
With Northern Cheyenne Cultural Commission

PO Box 37, Huntley, MT 59037 406-348-2079-nicol
PO box 763, Lame Deer, MT 59043 477-6215-tallbull

10-12-92

RECEIVED
OCT 14 1992
STATE LANDS

Mike DaSilva
MT Dept of State Lands
Capitol Station
Helena, MT 59620

Dear Mike:

Per our conversation on Oct. 6 and Oct 12 over the publishing of our comments submitted on the Bull Mountain Mine # 1. I have talked to all of the Board Members on the printing of our comments and they have o'kayed the printing of the letter in the final EIS.

Sincerely,

Nicol

Nicol Price
coordinator

(61)

RECEIVED
OCT 06 1992
STATE LANDS

October 2, 1992

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. DaSilva:

This letter is being sent as written comment on the Draft EIS for Meridian Minerals Company Bull Mountain Mine No. 1, located in Musselshell and Yellowstone Counties, Montana, dated August, 1992.

If I understand the text of this EIS statement, Meridian is proposing to open an underground coal mine in the Bull Mountain area, approximately 35 miles north of Billings, Montana, or about 16 miles south of Roundup, Montana. The proposal is to develop mine and haul the coal by truck to a loadout site in Huntley, Montana. The truck hauling would cease when the 33 mile rail spur to the Broadview area is completed.

I don't have any problem with the mining of coal if people in the mine area are satisfied with Meridian's proposal. I do have a strong position on the loadout site, and also the truck traffic from mine to loadout site.

The truck hauling and loadout site are temporary. During the test loadout during the summer of 1990, the dust from the loadout site was unbearable. I had special frames made to put filters in my bedroom windows, and still had to breathe coal dust. I have a lung problem, and my doctor says any coal dust I breathe will continue to deteriorate my lung capacity. **61-1**

We tried to get Meridian and/or Montana Rail Link to not load out when we had adverse wind conditions. They gave us lip service, but continued to haul and load out as they pleased. It seems to me that if the mine is approved, it will also approve the truck hauling and loadout site. I am opposed to this type of approval. I would suggest that some alternate route, rail line, conveyor belt, or some other means to move the coal to the railroad be explored. I am not about to put up with the dirt we experienced in the summer of 1990. **61-2**

Please give this community of Huntley some consideration as to alternate ways to handle the coal. Thank you.

Sincerely,

Howard E. Zahller
Huntley, Montana 59037

cc:Steve Duganz, Yellowstone County Air Pollution Control
Chairman Jim Ziegler, Yellowstone County Commissioners
Dennis D. Casey, Commissioner, Department of State Lands ✓

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(62)

Subject: Proposed mine in Roundup Montana

RECEIVED
OCT 05 1992
STATE LANDS

Mr. Mike DaSilva
Montana Dept. of State Lands
Capital Station
Helena, MT 59620

Donna Marsh
4683 Hwy 87 so.
Roundup, MT 59072

Mr. DaSilva,

My husband has been fortunate enough to have worked at the P.M. Coal mine for approximately 10 years. He has worked both above and below ground, amoung large amounts of coal dust. He has no health problems from the coal.

If he had not had this job at the mine he would have been forced to move to another town or state to make a living. I am grateful he did not have to do that so we could be close to our families here. We have raised 4 children here and are greatful we were able to be in Roundup to do it. A small town has so much to offer.

People that are concerned about the added traffic that the proposed mine will add, must be made aware to use caution. We have lived next to Hwy. 87 for the past 20 years, with the highway about 100 feet from our front door. Our children have been taught from an early age that there is danger there and they never did go near the highway. The danger was always there but we were always alert. You can live close to well traveled roads if you have to.

Montana has to wake up to some facts. Do they want people to live in this state or others. People will have to go where the jobs are. Our whole community could benefit from this mine, not only Roundup but the whole state. The schools, with the added tax revenue would be better equiped to serve our children and make our lives easier to live.

We do totally support the proposed mine project in the Bull Mountains.

The majority could and should be effected by the decision to go ahead with the mine or not. We do urge you to permit this mine to happen.

Sincerely,

Donna Marsh

627.0 app 144

October 2, 1992

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

RECEIVED
OCT 06 1992
STATE LANDS

Dear Mr. DaSilva:

This letter is being sent as written comment on the Draft EIS for Meridian Minerals Company Bull Mountain Mine No. 1, located in Musselshell and Yellowstone Counties, Montana, dated August, 1992.

If I understand the text of this EIS statement, Meridian is proposing to open an underground coal mine in the Bull Mountain area, approximately 35 miles north of Billings, Montana, or about 16 miles south of Roundup, Montana. The proposal is to develop mine and haul the coal by truck to a loadout site in Huntley, Montana. The truck hauling would cease when the 33 mile rail spur to the Broadview area is completed.

I don't have any problem with the mining of coal if people in the mine area are satisfied with Meridian's proposal. I do have a strong position on the loadout site, and also the truck traffic from mine to loadout site.

The truck hauling and loadout site are temporary. During the test loadout during the summer of 1990, the dust from the loadout site was unbearable. I had special frames made to put filters in my bedroom windows, and still had to breathe coal dust. I have a lung problem, and my doctor says any coal dust I breathe will continue to deteriorate my lung capacity.

We tried to get Meridian and/or Montana Rail Link to not load out when we had adverse wind conditions. They gave us lip service, but continued to haul and load out as they pleased. It seems to me that if the mine is approved, it will also approve the truck hauling and loadout site. I am opposed to this type of approval. I would suggest that some alternate route, rail line, conveyor belt, or some other means to move the coal to the railroad be explored. I am not about to put up with the dirt we experienced in the summer of 1990.

Please give this community of Huntley some consideration as to alternate ways to handle the coal. Thank you.

Sincerely,

Howard E. Zahller
Huntley, Montana 59037

cc:Steve Duganz, Yellowstone County Air Pollution Control
Chairman Jim Ziegler, Yellowstone County Commissioners
Dennis D. Casey, Commissioner, Department of State Lands

627.0 app 144

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(63)

RECEIVED
OCT 05 1992
STATE LANDS

Chalentz A. McKown
2 P. M. Coal Road
Roundup, Montana 59072
October 1, 1992

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva,

The Landowners and Residents of the route for hauling coal from the proposed Bull Mountains Mine No. 1 to State Highway 87, propose an alternative solution.

We propose that a road be built from the Load Out Site, west to Highway 87 along the proposed railroad right of way. This would be a solution to several potential problems. Not to mention all of them, we have listed six:

1. It would be away from any closely populated areas
2. Maintenance of 1½ miles (approx.) opposed to 5½ miles (approx.)
3. Less health hazard to residences because of dust
4. Not having to apply a Dust Agent to P. M. and Fattig Creek Roads
5. Keeping trucks away from School Bus Route
6. Less noise level for all residents along proposed route

63-1

We think this proposed solution is a much more viable alternative.

Thankyou for your attention to this proposed solution.

Sincerely,

Chalentz A. McKown and
the following Residents

627.0 app 144

E. M. Comly 167 Old Divide Rd, Roundup, MT 59072
Joan B. Comly 167 Old Divide Road, Roundup MT 59072
Tom R. Jen[illegible] 171 Old Divide Rd Roundup MT 59072
[illegible] 171 Old Divide Rd Roundup MT 59072
[illegible] 24 PM COAL ROAD ROUNDUP, MT 59072
Margaret Simics 24 PM Coal Rd. Roundup, MT 59072
[illegible] 454 Old Divide Road Roundup MT 5907
[illegible] 477 Old Divide Rd. Roundup MT 59
[illegible] 365 Old Divide Rd. Roundup, MT 5907
Mary K. Rich 365 Old Divide Rd. Roundup, Mt. 59072

10-1-92

RECEIVED
OCT 05 1992
STATE LANDS

627.0 app144

Dale Marsh
4683 Hwy 87 So.
Roundup. MT 59072

(64)

Dear, Ms. DaSilva,

I have worked at P.M. coal mine for about 10 years. I have worked below ground and done strip mining. there is only one time that I can remember that I was injured in my line of work - I did get my left thumb smashed and was unable to work using that hand for a few days. Every precaution possible is taken to insure safety on the job. I have never been ill from coal dust and do not have any health problems.

As in any line of work where machinery is used, a person has to use common sense and use caution at all times. Ear plugs are only one type of special equipment that is used at the mine; a hard hat, steel toe shoes and respirator masks are also used. these are all used in any type of construction project - again common sense is used all the time.

this job has been important to me and my family, I have fed my family with the money earned at the coal mine. the job is one of convenience, it is close to Roundup where I live so I don't have to go to another town to find work. My four children have benefited from my time here at the mine.

While working at the mine I have observed much wild life watering at the mine water. Deer, Elk, turkeys, coyotes, to name a few. Cattle have been raised on the mine property, ate the grass drunk the water and grown healthy amoung all the coal dust.

In regard to the traffic the proposed mine will incure, here common sense must be used again.

Anyone living on a busy road must be alert.

I support this mine project and hope the whole community will benefit from it. I have always shopped in Roundup & supported the merchants, I have done my share to help the community.

* Montana has to wake up to the fact that Industry is our only hope for survival. If the majority can feel comfortable and benefit from this industry it is time to allow them to benefit and improve their lives.

Because of Strict State regulations much industry cannot survive here, people cannot survive here. It is time for support from our State - People need to survive here. thankyou, Dale Marsh

---

(65)

October 2, 1992
25 Gibbtown Ave
Roundup, Montana 59072

RECEIVED
OCT 05 1992
STATE LANDS

Mr. Mike DaSilva
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. DaSilva:

I have read the draft E.I.S. and support alternative #1.

Anyone who feels that the miniature impact on the environment is more important than people working, spending money, and paying taxes is simply out of touch with reality and are evidently wealthy enough to not have to earn a living like those who are not so fortunate.

Please put 300 people to work and lets work together for the environment.

Sincerely,
Jo Ann E. Mills
JO ANN E. MILLS

627.0 app144

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(66)

627.0
app144

RECEIVED
OCT 05 1992
STATE LANDS

4047 Highway 87 South
Roundup, Montana, 59072
October 2, 1992

Mr. Mike Da Silva, Environmental Specialist
Montana Department of State Lands
Capital Station, Helena, Montana 59620

Dear Sir:

I have read statements that said that we're not going to let the ecology slip away by the people who support the Meridian Minerals Companies Bull Mountains Mine Number One. There is a problem with that Meridian Minerals has been donating a lot of money to non-profit organizations in what appears to me to be an attempt to buy support for their mine.

Let us face one hard cold fact, once the eco-system is disturbed by mining, it will never return to its original state.

66-1 The realization of pollution I live with every day because I was permanently injured by air pollution and industrial chemicals. I know first hand what happens. The World Health Organization has stated many times the warning and many leading physicians as to the health problems that occur and companies always say they are not responsible.

I purchased a new home and moved to Roundup, Montana because of the life style and air quality of the Bull Mountains. Now that is threatened. Should the environment change it would be very severe to my health. Possibly death.

I have a very simple question should that happen. Are the good people of the state of Montana going to pay my medical and hospital expenses and take care of my family. | 66-2

I Do Not Support the Mine At All

Sincerely,

Talmadge Gee

P.S. I am not a member of any group or organization. I am just a citizen that has a health problem. The medical science is finding more pronounced everyday.

Oct 1, 1992

(67)

Mike Da Silva
Environmental Specialist
MT Dept of State Lands
Capital Station
Helena, MT 59620

RECEIVED
OCT 05 1992
STATE LANDS

I have lived on the edge of the PM Coal Company's mine yard for thirty-two years, where coal has been mined and processed from underground and strip mining. This is where I've raised my two children.

The Children have raised cattle on the mine property for twenty years successfully, with no decrease in water, due to mining.

Wild life and game animals feed and water here and around the mine property.

approximately 200,000 tons of coal from Meridian's Test Pit was processed and hauled out by trucks from the PM Coal Plant.

627.0
app 144
The children and I, or the cattle, have had no adverse effects on our health or lives, due to coal dust, road dust, noise, water pollution, mining or traffic.

Mining and Living are very Compatible.
I recommend that, the Meridian mine permit be approved.

Mrs. Beverly Meged
127 PM Coal Road, Roundup, MT

---

(68)

Steve and Jeanne Charter
13838 Hwy. 87 N
Shepherd, MT 59079
947-2151

October 5, 1992

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

RECEIVED
OCT 06 1992
STATE LANDS

Dear Mr. DaSilva,

Enclosed are our written comments on State Lands' draft Environmental Impact Statement for Meridian Minerals Company's proposed Bull Mountain Mine.

Thank you for your attention to our concerns.

Sincerely,

Charters

627.0
app 144

Charters detailed comments on State Lands Draft EIS on proposed Bull Mountain Mine no. 1:

SUBSIDENCE:

The draft EIS analysis is inadequate. Given the area's rough, steep terrain, a geology that includes extensive massive sandstones and precipitation patterns involving seasonal "gully washers", major impacts from subsidence are likely--including extensive slope failure, sloughing, and erosion started by surface fissures and altered drainage patterns. The draft EIS concludes that impacts to the stability of slopes will be "minor", but never explains why. It neither analyzes the area-specific factors that would result in such damage nor proposes mitigation measures nor analyzes their effectiveness or cost. The final EIS needs to do so on a section by section basis including the lands in the potential "angle of draw". Creation of buffer zones should be considered as a valid mitigation alternative that has been used in other western longwall mines that include steep terrain and valuable water resources. | 68- 1

It should be noted that officials with Utah Power and Light have publicly identified problems with cracking, spalling, sloughing and slope failure when longwall mining under steep slopes and escarpments (1). The Utah Power and Light mines have overburdens of 1500 feet and more over 9 foot seams (2). | 68- 2

The draft EIS appendix C notes that longwall mine areas with massive sandstones in the overburden may experience more surface impacts. The federal Bureau of Mines recognizes this kind of geology as a major factor in severity of subsidence impacts which tends to make subsidence more violent, as the overburden holds and then breaks all at once, and caving profiles more extreme (3) (4). The draft text never addresses the massive sandstone layers (up to 60 feet thick) that occur in the Bull Mountains. The final EIS needs to identify the existence of massive sandstones in the life-of-mine area overburden geology on a section by section basis and evaluate their influence on subsidence impacts and mitigation measures. | 68- 3

Dunrud (5) observes that the weight of ridges in rough country produces more tension fracturing than occurs in flat or rolling terrain. He reports large--some hundreds of feet long and up to as much as three feet in width--surface cracks migrating up from 900 foot deep mine subsidence. | 68- 4

In the eastern United States, large scale longwall mining has altered drainage patterns of entire watersheds and created serious erosion and drainage problems. The Illinois South Project has documented such situations in Illinois, Ohio, Pennsylvania, and the Appalachian states over mines with 500-900 foot thick overburdens (2) (6). Edward Hollop of the US Bureau of Mines reports significant drainage impacts (1). | 68- 5

68-6 The Old Ben Coal Company longwall mines in Franklin County, Illinois lie 650 feet below gently rolling farmland (2). Local landowners report longwall subsidence of up to four feet from a seven foot seam extraction, serious drainage disruption and field cracks that started 2-4 inches wide and grew to 12-15 inches wide (6).

Ingram's subsidence study provides photo documentation of severe sloughing, cracking and erosion over longwall panels in rough terrain in West Virginia (7).

According to Diane Nielson, director of Utah's Department of Natural Resources mining division, Utah has had subsidence areas posted and fenced to keep the public away from surface hazards (1) Overburden depths in Utah longwall mines are generally quite thick: 1500 feet or more (2).

WATER RESOURCES:

68-7 The draft EIS in inadequate and inaccurate. We believe the flows on a number of our most important springs are underestimated. Some important water resources are not identified at all. The draft EIS "bell curve" rating system unfairly undervalues consistent live springs for both livestock and wildlife use. Anyone who has ever "fought water" in eastern Montana would agree with us. The final EIS should revise its spring inventory so that it recognizes practical signigicance. We believe that inventory should be done in direct consultation with operators like us.

68-8 The draft EIS never addresses or documents the quantity of shallow groundwater flows in tributary drainages either in the life-of-mine area or downstream from it. This alluvium water is an important resource to ourselves and our neighbors. The information should be available as gaging wells have been installed for several years. The final EIS should include this information and a realistic analysis of the feasibility and cost of "repairing" natural drainage to restore shallow groundwater flows. We feel that the flow volume of most of our lower springs is underestimated because the draft EIS never recognizes them as intermittent surface expressions of significant shallow groundwater flows throughout the Railroad and Fattig Creek drainages.

68-9 The draft EIS proposes to rely extensively on "horizontal drains" to replace lost springs, but it never provides a realistic analysis of the feasibility and cost of such technology. We are familiar with horizontal drilling that has only limited applications. Is this what is proposed? The final EIS should address the practical application of this proposed mitigation measure in detail.

68-10 The draft EIS never recognizes the importance of Dunn Mountain's highly permeable clinker cap as a regional water recharge area, nor does it justify its conclusion that longwall mining will not affect this extensive perched aquifer and its related springs and shallow groundwater discharge into surface drainages. The final EIS should

specifically address potential impacts to the hydrologic balance of the Dunn Mountain water resource.

68-11 Dunrud (5) found in the Geneva mining area in central Utah that large tension cracks migrated to the surface 900 feet above the mine area and diverted all surface and groundwater flow. A geologic cross section shows about 40% of the overburden there to be shale and mudstones, with some strong sandstones. Dunrud found in the Somerset mining area in Colorado that large tension cracks migrated to the surface up to 600 feet above the mine workings and diverted surface and groundwater flow into the cracks. A geologic cross section shows over 75% of the overburden there to be shale and mudstones with thin sandstones that pinch out.

68-12 Moebs and Barton (8) document water loss with 950 feet of overburden. The geologic cross section shows about 50% of the overburden there to be siltstone and clay.

68-13 Keith Thompson's report (9) estimates Bull Mountain coal overburden to be only about 30% clay, shale and siltstones.

In general, the way the draft EIS was organized made it extremely difficult to correlate data and conclusions about specific water resources important to us. A section by section appraisal would make the final EIS a much more useful study for everyone involved.

What follows are comments on our water section by section. A US geological survey map is attached that we hope makes our concerns and questions clearer. (Appendix A)

Section 22 (T6N, R27E)

Big Spring #71115
Why do you rate this spring of low importance? We water over 350 68-14
pair at this spring. Why do you conclude that the potential for
impact is moderate and severity of impact will be negligible? We have
never known this spring to run as low as 1.3 gallons per minute. We
would also estimate the total average flow as better than 4.3 gallons 68-15
per minute. It should be recognized that RR Creek flows live through
section 22 below this spring year round which is significant for
wildlife and vegetation as well as livestock use. The draft EIS
claims that the average quality of water in the Bull Mountains is not
very good. The final EIS should explicitly recognize the very high 68-16
quality of water in Dunn Mountain's higher springs.

Raspberry Spring #71125
Why do you rate this spring of low importance? This fork of RR 68-17
Creek is also live year round down through section 22, and flows at
least as strong or stronger than the Big Spring fork. Why is the
average flow estimated at only .4 gallons per minute? Why do you 68-18
conclude that the potential for impact is moderate and the severity of 68-19
impact will be negligable?

Dunn Spring #16135
Why do you rate this spring of low importance? Why do you estimate the potential for impact as low and its severity negligible? 68-20

Section 23 (T6N R27E)
68-21 The forks of RR Creek flow live through the east half of this section year round and springs up consistently through the west half The draft EIS makes no mention of the significant water resources in this section at all. It predicts no potential for impact in this section--half of which is in the life-of-mine area. Why have the water resources in this section and the impacts to them been ignored?

Section 24 (T6N R27E)

Tipi Spring #71445
68-22 The draft EIS only recognizes this one spring whereas RR Creek springs up repeatedly through the SW quarter of section 24. Groundwater is very shallow in the creek alluvium; there should be a way to measure its flow. It is more significant than .4 gallons per minute. We can consistently dig down with a backhoe and get several feet of standing water. Why does the draft EIS estimate the potential for impact as negligible? Why doesn't the draft make any estimate of the value of this water?

Lower RR Creek Spring #71465
68-23 This spring has never run as low as 2 gallons per minute in our experience since the 1984 fire. Our experience with this spring is that its flow is very stron and consistent. The draft EIS makes no estimate of the value of this spring. It is in fact extremely important to our operation. The draft estimates the potential for impact as negligible. We have been told informally by both company and OSM staff to expect to lose this spring if Dunn Mountain were undermined. What is your rational for expecting no impact?

Section 25 (T6N R27E)
68-24 RR Creek usually springs up in pools below the Lower RR Creek Spring through the NE quarter of section 25. Again groundwater is very shallow in the creek alluvium in this section and backhoe work would expose several feet of standing water. This shallow drainage groundwater resource should be recognized and evaluated.

Section 15 (T6N R27E)

Red Tank Spring #14115
68-25 This spring heads in section 15, not section 16. In our experience, the Red Tank spring is as strong and consistent as the Big Spring in section 22 and capable of watering as many cattle. We question your estimate that its average flow is only 1.8 gallons per minute. Why is it rated as of low importance? Why do you estimate that the potential for impact is low and the severity negligible? It

should be noted that the Red Tank fork of Rehder Coulee flows live through the SE quarter of section 16. 68-25

Escape Draw Springs #14155 and 14165
Why is potential for impact to these springs considered low? 68-26

Black Canyon spring-fed reservoir #53175
68-27 Why do you rate this spring-fed reservoir as of only moderate importance? We realize flow into a large pond is hard to measure, but we question your estimate that it only flows an average of 2.4 gallons per minute. The reservoir level maintains itself consistently year round and can water a very large number of animals. Our impression is that most of the flow goes on out underground at a shallow level, and evaporation off this big a surface area is signficant. Why do you estimate the potential for impact as only moderate?

68-28 The upper length of the Black Canyon fork of Fattig Creek flows year around in the SE quarter of section 15. The final EIS should recognize this resource.

Section 11 (T6N R27E)

Upper Section 11 Springs #53195
68-29 The draft EIS only recognizes one spring whereas Fattig Creek springs up in a very strong series of pools through the SW quarter of section 11. We question the draft's conclusion that this rich spring area is only of moderate importance. Why do you estimate the potential and severity of impact as both negligible?

Buffalo Head Spring #53285
68-30 Again, we realize calculation of spring flow into a reservoir is hard to measure, but we question your estimate that this spring only flows an average of .5 gallons per minute. You do not rate the value of this spring; it is in fact important because of its location in rough terrain. Why do you estimate its potential for impact as negligible?

68-31 Fattig Creek often springs up in pools through the north half of section 11. The shallow groundwater resource should be recognized and evaluated.

Section 2 (T6N R27E)

Swimming Hole # 53465
68-32 This hole has very strong water supply and can water a large number of animals. We believe it is inaccurate to represent it as only flowing an average of .1 gallons per minute. It just flows out underground at a very shallow level. Why do you rate its potential for impact as negligible? Why don't you evaluate it as a water resource?

Road Spring #53485

Why do you estimate the potential impact to this strong creek alluvium spring as negligible? Why don't you evaluate it as a water resource? 68-33

Lake Louise #53755

We question your estimate that Lake Louise only flows an average of 1.4 gallons per minute. Our impression is that the majority of the flow goes on out underground at a shallow level and a significant amount is lost to evaporation. You estimate the potential for impact as none. The spring comes right out in the coal seam--how do you justify this conclusion? 68-34

Fattig Creek consistently flows live through the south third of section two. It is an important water resource that should be recognized and evaluated. 68-35

Section 10 (T6N R27E)

Fat Woman Spring #53575

We question your estimate that the spring only flows an average of .2 gallons per minute. Our impression is that most of the flow discharges underground at a shallow level. You do not rate the importance of this spring. It is in fact valuable because of its persistence and location. Why do you estimate that there is no potential for impact? 68-36

Picnic Spring #52165

We question your estimate that the spring only runs a gallon a minute. Our impression is that most of the flow discharges underground at a shallow level. Why do you estimate the impact to this spring as negligible? You do not rate the importance of this spring. It is in fact valuable because of its persistence and location. 68-37

Section 9 (T6N R27E)

Lower Two Dam #52145

We question your estimate that this spring does not flow. Our impression is that most of the flow discharges underground at a shallow level. Why do you estimate the potential impact to the springs in this drainage as only moderate? 68-38

#9 Spring #52225

We question your estimate that this spring only runs an average of .7 gallons per minute. Our experience is that it is a strong spring and most of the flow must discharge underground at a shallow level. Why do you estimate this spring to be of low importance? Why do you estimate the potential for impact to be only moderate and the severity of impact negligible? 68-39

Section 3

NOTES

(1) Subsidence Seminar, American Mining Congress, December 1989, Salt Lake City, Utah

(2) Coal Age Census of operating longwall installations in the United States, August 1986

(3) Thick Seam Mining in the Western United States, D L Boreck, Bureau of Mines Information Circular 9116, 1986

(4) Mine Subsidence Control, Bureau of Mines Information Circular 9042, Precalculation of subsidence over longwall panels in the Northern Appalachian Coal Region, Vladimir Adamek and Paul Jeran, 1985

(5) Some Engineering Geologic Factors Controlling Coal Mine Subsidence in Utah and Colorado, C Richard Dunrud,.Us Geological Survey Professional Paper 969, 1976

(6) Illinois South Project, Memorandum on Underground Mining Issues, Herrin, Illinois

(7) David Ingram, Bureau of Mines Information Circular 9242

(8) Mine Subsidence Control, Bureau of Mines Information Circular 9042, Short term effects of longwall mining and shallow water sources, Noel Moebs and Timothy Barton, 1985

(9) Groundwater and Potential Coal Mining in the Bull Mountains, South Central Montana, by Keith Thompson, Montana Bureau of Mines open file report 100, 1982

Sam Place Springs #52455

These are very consistent springs. Why do you not rate them as to importance? Why do you estimate the potential for impact to be negligible? 68-40

This fork of Fattig Creek springs up consistently through section 3. This shallow alluvium groundwater resource should be recognized and evaluated. 68-41

Section 34 (T7N R27E)

Wedding Cliffs Springs #52655

These are very strong springs. We question your estimate that they only average 3.5 gallons per minute. Our impression is that most of the discharge goes out underground at a shallow level. Why do you not rate them as to importance? Why do you estimate the potential for impact to be negligible? 68-42

Section 35 (T7N R27E)

#35 Spring #52855

We question your estimate that this spring only averages a flow of .2 gallons per minute. It maintains its level while watering a significant number of animals. Why do you consider mining upstream will have not effect on its flow? Why do you not rate it as to importance? 68-43

Attached is a copy of our grazing and exploration and mining access lease with Glacier Park Company-Meridian Minerals Company. We are dependent for the continued viability of our ranch operation on the adequacy of the terms and conditions required in any mining permit issued to Meridian by the State of Montana. We need and expect to be welcomed to participate throughout the State Lands Department's decision-making process. (Appendix B)

Appendix B

JAN 11 1991

LEASE

COPY

Lease No. E12420

AGREEMENT made this 11th day of January, 1991, but effective April 1, 1990, between GLACIER PARK COMPANY, of P. O. Box 579, Miles City, MT 59301, hereinafter called "Glacier," and CHARTER RANCH, INC., of Route 1, Shepherd, Montana 59079, hereinafter called "Charter."

GLACIER LEASE TO CHARTER

1. Glacier, in consideration of the payments and agreements hereinafter stated, does hereby lease unto Charter for the sole and exclusive purpose of grazing livestock thereon, until this Lease is terminated as hereinafter provided, the following described tract of land (hereinafter referred to as "Glacier's Property"):

> All of Sections Three (3), Nine (9), Eleven (11), Thirteen (13) and Fifteen (15), the Northeast quarter (NE/4) of Section Twenty-two (22), all of Section Twenty-three (23), the Northeast quarter of the Southeast quarter (NE/4SE/4) of Section Twenty-four (24), all of Section Twenty-five (25), Township Six (6) North, Range Twenty-seven (27) East, and all of Section Thirty-five (35), Township Seven (7) North, Range Twenty-seven (27) East, Montana Principal Meridian, in Musselshell and Yellowstone Counties, Montana, containing 5,314.63 acres, more or less.

EXCEPTING AND RESERVING to Glacier and to Meridian Minerals Company, a Montana corporation, Glacier's Attorney-In-Fact authorized to conduct all operations and activities relating to minerals in, under or upon Glacier's Property, (sometimes hereafter collectively referred to as "Glacier/Meridian") the right to enter upon and use or consume such part or parts of the surface of Glacier's Property as may be necessary or convenient for the purpose of exploring for (by geological, geophysical or other methods), drilling for, producing, mining (by any method, including, but not limited to, surface mining), extracting, taking, storing, processing, transporting, marketing and selling all minerals of every nature whatsoever, including, but not limited to, uranium, coal, iron, natural gas and oil in, upon or under Glacier's Property, and including all steam and waters and the minerals and gases therein, and for the purpose of erecting and maintaining on Glacier's Property such buildings, shafts, devices, wells, roadways, shops, ditches, powerlines and all other structures and improvements in, on, over, under or across Glacier's Property as Glacier/Meridian may desire or deem necessary in any operations and activities relating to minerals in, under or upon Glacier's Property or in, under or upon any other lands. In addition, Glacier/Meridian specifically reserve the right to enter upon and use any portion of the surface of Glacier's Property for conducting any and every type of environmental reconnaissance, monitoring, surveying, measurements, drilling, pumping, sampling, testing or other environmental work that may be required by any regulatory agency or deemed necessary by Glacier/Meridian for the purpose of obtaining permits or regulatory agency approvals, complying with permits from any regulatory agency, or gathering data for feasibility studies. The rights and interests of Glacier/Meridian set out above are hereinafter collectively referred to as "Mining Rights."

2. In addition to the Mining Rights, Glacier reserves the right to use Glacier's Property for any purposes not inconsistent with the grazing rights herein leased to Charter. As a courtesy to Charter, Glacier will notify Charter in advance to the extent practicable when it wishes to use Glacier's Property for hunting or other recreational uses.

3. Charter shall have the right to use such water, except geothermal waters and steam, found in, upon or produced by Charter from Glacier's Property as may be necessary or convenient for Charter's grazing operations on Glacier's Property. This Lease is subject to all existing easements, servitudes and rights-of-way as reflected by public records and records of Glacier.

4. For the purpose of determining rent to be paid by Charter hereunder, the grazing capacity of Glacier's Property is 1,020.00 Animal Unit Months (AUM's) and the number of animals grazed by Charter shall not exceed that number except as provided in Paragraph 5. The annual rental rate to be paid by Charter for each of the first five years of this Lease shall be $8.00 per AUM or Eight Thousand One Hundred Sixty Dollars ($8,160.00) per annum, payable in advance to Glacier at P.O. Box 579, Miles City, Montana 59301. The annual rental rate of $8.00 per AUM shall be subject to change at the end of each five year period during the term hereof, commencing with the sixth year of the term, based on the change in the Producer Price Index for Cattle, Commodity Code Number 0131, as set forth in Table 6, Producer Price Indexes and Percent Changes for Commodity Groupings and Individual Items (the "PPI"). The new rental shall be equal to the product obtained by multiplying a fraction, the numerator of which shall be the PPI for the month of December preceding each fifth anniversary hereof, and the denominator of which shall be the base PPI for the month of December, 1989 (117.3) times the base annual rental rate of $8.00 per AUM. If the PPI is no longer published or is substantially modified, a comparable index, acceptable to both parties, shall be substituted.

To illustrate how the adjustment to the annual rental rate per AUM would be calculated for the lease period from April 1, 1995 through March 31, 2000, the following example is provided;

(1) Assume the PPI for Commodity Code 0131 for December 1994 is 131.7

(2) Annual Rental Per AUM for Period from April 1, 1995 through March 31, 2000 shall be $8.98 in accordance with the following calculation:

$$\frac{\text{Current PPI for December 1994 (131.7)}}{\text{Base PPI for December 1989 (117.3)}} \times \$8.00 = \$8.98$$

5. Glacier and Charter shall periodically review the season of use, stocking rate and range condition of Glacier's Property. In the event that Glacier asserts that Charter has exceeded the stocking rate or grazing capacity of Glacier's Property, Glacier shall give written notice to Charter. Within 30 days of such notice, Charter and Glacier shall each select one person who is not an agent or employee of Charter or Glacier or any Burlington Resources Inc. related company or any relative of the Charter family, who shall jointly examine the property and review its use and who shall jointly issue a written report which recommends a stocking rate or grazing method. If the two persons thus selected find that the stocking rate or grazing capacity has been exceeded, Charter shall have 30 days from the date of the report to comply with the recommendation of the two persons. If Charter shall fail to follow such recommendations, Glacier may terminate this Lease by written notice to Charter.

6. Charter may assign or sublet all or any portion of this Lease upon giving 60 days written notice of such assignment or sublease to Glacier.

7. This Lease shall be effective as of the 1st day of April, 1990, and shall remain in effect for a term of forty (40) years thereafter unless terminated as hereinafter provided in this Section 7 or Section 8 hereof. Glacier/Meridian may terminate this Lease, in whole or in part, upon written notice to Charter, if it determines, in its sole discretion, that its exclusive use of all or any portion or portions of Glacier's Property is necessary for the exercise of Glacier/Meridian's Mining Rights in accordance with an approved mine plan. Any such termination by Glacier/Meridian shall not have an effective date which is more than eight months or less than six months prior to Glacier/Meridian's anticipated actual use so that Charter will have at least six months written notice of any such termination. In the event this Lease is terminated in part by Glacier/Meridian pursuant to this Paragraph 7, a rent adjustment shall be made as follows: the annual dollar loss in use to Charter shall be calculated by multiplying $1.56 per acre times the total acres eliminated from the Lease and multiplying such product by the fractional part of the lease year, measured to the nearest day, in which Charter was unable to use the acreage eliminated. The assigned value of $1.56 per acre shall be subject to change in the same manner and at the same time as the rental rate per AUM contained in Paragraph 4 of this Lease. Charter shall have the choice of either having the following year's annual rent reduced by the amount of the rent adjustment, or having Glacier/Meridian refund to Charter the amount of the adjustment within 60 days of its determination. The loss so calculated shall be limited to the acres deleted from this Lease and will not be calculated on the use of existing roads and trails or for disruption of ranching operations caused by activities arising out of the Mining Rights or other activities of Glacier/Meridian. In the event this Lease is terminated in whole by Glacier/Meridian pursuant to this Paragraph 7, a rent adjustment shall be made by Glacier/Meridian promptly refunding to Charter the appropriate pro rata share (based upon the effective date of termination) of the rent paid by Charter for the lease year in which such termination occurred. At the termination of the Lease, in whole or in part, Charter may, within ninety (90) days remove fences and other improvements installed by Charter, except any water wells.

8. If Charter shall fail to pay the annual rent when due hereunder or shall fail to perform any other covenant hereof, Glacier may terminate this Lease upon sixty (60) days notice in writing to Charter and Charter shall forfeit all rent previously paid and may remove any fences or other improvements (except water wells) installed by Charter in the event of any such termination; provided, however, that Charter may avoid such termination by curing said default within said sixty (60) day period. Charter may terminate this Lease upon 90 days written notice to Glacier.

9. Charter may construct fences and other improvements on Glacier's Property, provided written approval is received in advance from Glacier and the improvements comply with the laws of the State of Montana and of the United States. All existing improvements shall be maintained by and at the expense of Charter during the lease period; provided, however, that Charter shall not be responsible for maintaining any fences or other improvements of Glacier/Meridian which are used by Glacier/Meridian in carrying out or supporting the above-described Mining Rights. If it so desires Glacier shall have the right to construct fences or other range improvements on Glacier's Property which do not unreasonably interfere with Charter's ranching operations.

10. If any part of Glacier's Property lies within any National Forest, grazing on Glacier's Property will be subject to regulations of the United States Forest Service, and Charter hereby agrees to comply therewith and Charcer will hold harmless and indemnify Glacier from and against any and all loss, cost (including reasonable attorneys' fees), damage, suit or expense, fines and penalties in any manner arising out of Charter's failure to comply with such regulations.

11. Glacier/Meridian shall have the right to enter upon Glacier's Property at all times for the purpose of inspecting Charter's operations thereon. Glacier/Meridian shall have the right of ingress and egress on and over Charter's Property (as described in Paragraph 1 of the below set forth Charter Lease to Glacier/Meridian) as required to inspect said operations.

12. Charter hereby assumes all risk and responsibility for, and shall indemnify and save harmless Glacier/Meridian from and against any and all claims, demands, costs (including reasonable attorneys' fees), suits or causes of action, for any injury, including death, or damages sustained by any third party or parties, Charter or Glacier/Meridian, their agents, employees, invitees, licensees or guests while upon Glacier's Property that is proximately caused by the negligence or willful misconduct of Charter, or its agents, employees, invitees, licensees or guests.

13. If this Lease is not in default, within 90 days after the expiration or other termination hereof, Charter shall remove Charter's property from Glacier's Property at Charter's own expense and shall leave Glacier's Property in a clean and sanitary condition satisfactory to Glacier. In the event of failure to do so, Glacier may remove such property and cause the cleanup work to be accomplished at the expense of Charter.

CHARTER LEASE TO GLACIER/MERIDIAN

1. As a material consideration for Glacier/Meridian having entered into the above set forth long-term grazing Lease with Charter and without which Glacier would not have given such grazing Lease to Charter, for the same consideration Charter hereby leases and demises to Glacier/Meridian for a term of forty (40) years from and after April 1, 1990, those lands of Charter described below ("Charter's Property"), for the purpose of allowing Glacier/Meridian to enter upon and exercise the mining and exploration rights reserved in favor of the mineral estate owner or its lessee or licensee in the pertinent patent covering Charter's Property, provided Glacier/Meridian has the proper approvals, permits, licenses, and/or leases that may be required by any regulatory authority or mineral owner that may be needed for Glacier/Meridian to exercise the mining rights reserved under the applicable patent. In addition, Charter grants Glacier/Meridian the right to enter upon and use any portion or portions of Charter's Property for conducting any and every type of environmental reconnaissance, monitoring, surveying, measurements, drilling, pumping, sampling, testing or other environmental work that may be required by any regulatory agency or deemed necessary by Glacier/Meridian for the purpose of obtaining permits or regulatory agency approvals, complying with permits from any regulatory agency or gathering data for feasibility studies. Glacier/Meridian shall have the right of ingress and egress on and over Charter's Property and the right to use any and all roads thereon in order to conduct, direct or perform any work in connection with such exploration and mining rights and environmental studies. As a courtesy to Charter, Glacier/Meridian will notify Charter in advance to the extent reasonably practicable when it will begin exercise of its rights hereunder which Glacier/Meridian anticipates will result in significant surface activity being carried out by Glacier/Meridian on Charter's Property. Nothing in this lease to Glacier/Meridian is to be construed as granting surface owner's consent for strip mining. Additionally, nothing in this lease to Glacier/Meridian is to be construed as relieving Meridian of the responsibility to comply with the terms and conditions of any mining permit issued to Meridian by the State of Montana.

CHARTER'S PROPERTY
MUSSELSHELL AND YELLOWSTONE COUNTIES, MONTANA

Township 7 North - Range 27 East

Section 34:	S/2S/2 (also described as Lots 1 (38.72 acres), 2 (37.78 acres), 3 (40.31 acres), & 4 (35.88 acres)

Township 6 North - Range 27 East

Section 2:	All (641.08 acres)
Section 4:	That part of the E/2 lying east of the County highway that runs in a NE-SW direction through the E/2 of said Section (approx. 150.00 acres)
Section 10:	NE/4, S/2NW/4, NE/4SW/4, NE/4SE/4 (320.00 acres)
Section 14:	All (640.00 acres)
Section 22:	NW/4, S/2 (480.00 acres)
Section 24:	All except the NE/4SE/4 (600.00 acres),

Containing 2,980.28 acres, more or less

⊗ ENTER UPON, TAKE, USE, OR EXCLUSIVELY USE 72H age

2. Glacier/Meridian is also expressly granted the right, in the exercise of the rights granted under this lease or otherwise provided by law, to ~~take and exclusively use~~ ⊗ all or any portion of Charter's Property, whereupon Charter shall be compensated by Glacier/Meridian for all portions of Charter's Property taken by reason of the exercise of such right by Glacier/Meridian. In the event of any such taking, Glacier/Meridian shall, at Charter's option, either (i) pay to Charter $3.00 per lease year, prorated to the date of such taking, for each acre thus taken or used during each lease year, together with such amount as will reasonably compensate Charter for all physical damage to Charter's improvements, damage sustained by Charter by reason of the destruction of or injury to any of Charter's livestock, or damage to water and water sources of Charter sustained by Charter by reason of such taking and use by Meridian, or (ii) purchase the portion or portions of Charter's Property so taken by Glacier/Meridian or all of Charter's Property described above. The above-referenced option provided to Charter in this Paragraph 2 shall be exercised by Charter within 90 days after Glacier/Meridian's exercise of its right to take and use all or any applicable portion of Charter's Property as aforesaid. If Charter shall fail to elect option (i) or (ii) above within the 90-day period, then Charter shall be conclusively deemed to have elected option (i) above; provided, however, the Charter's right to elect option (ii) above shall apply to all or any part of Charter's Property previously taken or used by Glacier/Meridian each time Glacier/Meridian exercises its right to take and use any additional portion of the Charter's Property irregardless of Charter's previous election or deemed election of option (i) above. The purchase price shall be the greater of (a) $150 per acre, or (b) the appraised value of such taken property. The $3.00 per acre and $150 per acre values shall be subject to change in the same manner and at the same time as the rental rate per AUM contained in Paragraph 4 of the Lease from Glacier to Charter. To obtain the appraised value, Glacier/Meridian and Charter shall each promptly select and pay for one qualified appraiser, who shall, within 30 days of the appointment of the last of such appraisers, each appraise Charter's interest in the taken properties independently and determine the fair market value thereof in a pre-mining condition. If the fair market values determined by the two appraisers so selected differ by less than 10% of the higher appraised value, the fair market value shall be equal to the average of the fair market values determined by the two appraisers. If, however, the fair market values determined by the two appraisers differ by more than 10% of the highest appraised value, then the two appraisers shall jointly select a third appraiser, the cost of which shall be shared equally by Glacier/Meridian and Charter. The third appraiser shall conduct his appraisal independently within 30 days of appointment, and the fair market value shall then be the average of the two fair market values which are the closest of the three values thus obtained. Each such appraiser shall be a disinterested person of recognized competence who has been involved in the real estate industry for a period of not less than five years. Notwithstanding anything contained herein to the contrary, it is expressly agreed that if Meridian shall become liable to Charter for damage to the water and water sources of Charter as aforesaid, then Meridian's total liability to Charter for such damage shall be limited to, and shall in no event ever be greater than, an amount determined by multiplying the acreage of Charter's Property (2,980.28 acres) times $150 (provided that such $150 value shall be subject to change in the same manner and at the same time as the rental rate per AUM contained in Paragraph 4 of the Lease from Glacier to Charter) and subtracting from the product thereof the then appraised value of Charter's Property. The appraisal procedures to be utilized to determine the then appraised value of Charter's Property shall be those above set forth in this Paragraph 2. The foregoing limitation on Meridian's liability to Charter for damage to water and water sources of Charter sustained by Charter by reason of the aforesaid taking and use by Meridian is just that, a limitation, and nothing herein shall be construed as relieving Charter from verifying the actual damages sustained by Charter to its ranching operation by reason of such taking and use by Meridian.

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In addition to the payments provided for in the preceding paragraph, unless Glacier/Meridian has previously purchased the applicable portion of Charter's Property, Glacier/Meridian shall pay Charter a one-time payment of $250.00 for each site where either exploration drill holes or water monitoring wells are installed on Charter's Property. A drill site shall include all holes within a 100 foot radius of the initial hole drilled at any given area.

3. Glacier/Meridian, jointly and severally, hereby assume all risk and responsibility for, and shall indemnify and save Charter harmless from and against, any and all claims, demands, costs (including reasonable attorneys' fees), suits or causes of action, for any injury, including death, or damages sustained by any third party or parties, Glacier/Meridian or Charter, their agents, employees, invitees, licensees, or guests while upon Charter's Property, that is proximately caused by the negligence or willful misconduct of either Glacier/Meridian, or their agents, employees, invitees, licensees or guests.

4. If Glacier/Meridian shall fail to perform any covenant hereof, Charter may terminate this lease upon sixty (60) days notice in writing to Glacier/Meridian; provided, however, that Glacier/Meridian may avoid such termination by curing such default within said sixty (60) day period. Glacier/Meridian may terminate this lease upon 90 days written notice to Charter; provided, however, that Glacier/Meridian shall not have the right to so terminate this lease as to any portion of Charter's Property which is covered by Meridian's State of Montana reclamation bond until such bond is finally released as to such portion of Charter's Property by the State of Montana. In the event of termination by Glacier/Meridian, Glacier/Meridian shall remove its property from Charter's Property within 90 days after such termination and shall leave Charter's Property in a clean and sanitary condition satisfactory to Charter. In the event of failure to do so, Charter may remove such property and cause the clean up work to be accomplished at the expense of Glacier/Meridian.

5. Glacier/Meridian may assign or sublet all or any portion of this lease upon giving 60 days written notice of such assignment or sublease to Charter.

MISCELLANEOUS PROVISIONS APPLICABLE TO BOTH LEASES

1. Service of any notice hereunder by Glacier shall be deemed complete if such notice is either personally delivered or is sent by certified mail with a return receipt requested deposited in the United States Post Office, addressed to Charter at Route 1, Shepherd, Montana 59079. Service of any notice hereunder by Charter shall be deemed complete if such notice is either personally delivered or is sent by certified mail with a return receipt requested deposited in a United States Post Office, addressed to Glacier at Glacier Park Company, P.O. Box 579, Miles City, Montana 59[illegible]1, with a copy to Meridian Minerals Company, 5613 OTC Parkway, Englewood, Colorado 80111.

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2. Glacier will pay all taxes levied or assessed upon Glacier's Property and Charter will pay all taxes levied or assessed upon Charter's Property.

3. This document incorporates the entire agreement of the parties. No prior representation, stipulation, agreement or understanding will be valid or enforceable unless incorporated herein.

4. This Lease shall be binding upon and inure to the benefit of the successors and assigns of Charter, Glacier and Meridian.

5. This document contains two separate leases and they have been placed in one document simply as a convenience. The continuation, default, termination or any other event with respect to one of the leases shall have no effect on the other lease. For as long as both leases remain in effect, there is no rent payable to Charter hereunder. In the event the Lease to Charter herein is terminated for any reason, the lease to Glacier/Meridian shall continue, and Glacier/Meridian shall pay to Charter rent in the annual amount of $3.00 per acre (less, however, any amount paid to Charter under Paragraph 2 of the lease to Glacier/Meridian for the same acreage) or at Charter's option Glacier/Meridian shall purchase all of Charter's Property set forth above in accordance with Section 2 of the Charter Lease to Glacier/Meridian. The $3.00 per acre figure contained in this paragraph shall be subject to change in the same manner and at the same time as the rental rate per AUM contained in Paragraph 4 of the Lease from Glacier to Charter.

IN WITNESS WHEREOF, the parties hereto have executed this instrument, in duplicate, the day and year first above written.

CHARTER RANCH, INC.

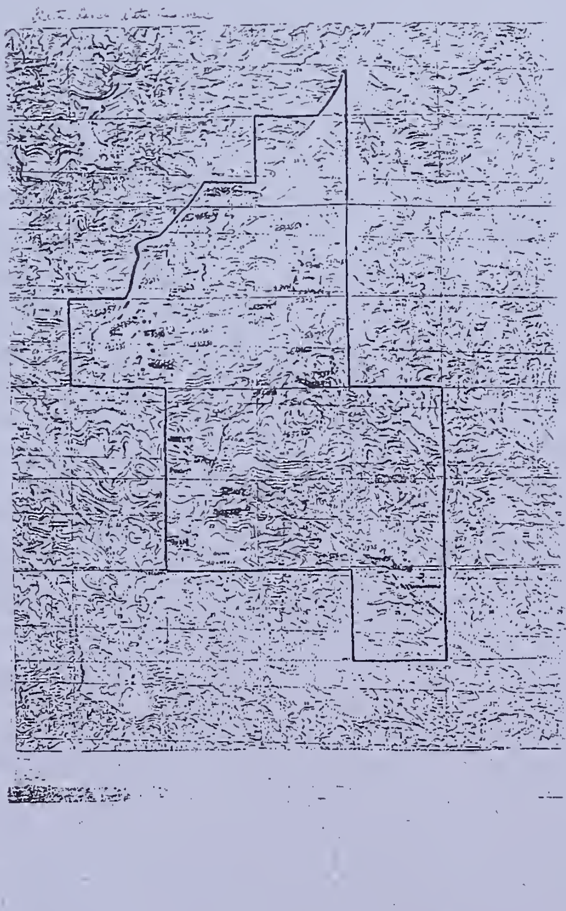
By Anne T Charter
Its President

GLACIER PARK COMPANY by its Attorney-in-Fact, MERIDIAN MINERALS COMPANY

By
Its PRESIDENT AND CEO

MERIDIAN MINERALS COMPANY

By Theodore Z Hawke
VICE - President



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Huntley Community Club. PO Box 161. Huntley. MT 59037

October 3. 1992

RECEIVED
OCT 06 1992
STATE LANDS

Mike Desilva
Environmental Specialist
MT Dept of State Lands
Capitol Station
Helena. MT 59620

RE: WRITTEN COMMENTS CONCERNING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE BULL MOUNTAINS MINE NO 1.

Dear Mr. Casey & Mr. Desilva:

(1) I disapprove of Dept of Montana's 5-year permit to mine coal. and (2) a Montana land use agreement being requested by Meridian Minerals company for the construction and operation of the Bull Mountain mine No 1 and its associated support facilities.

I also disapprove of (1) successive amendments of the Montana Permit to mine coal (2) A Montana Coal Lease, (3) a federal permit to mine coal. and (4) a Federal surface use permit may be requested in the future for life of mine development.

I disapprove of all the proposed actions due to the fact that MDSL has not adequately addressed alternative sites in this Draft EIS.

My major concern is that NO ALTERNATIVE SITES for the load-out facility are analyzed to the same extent that the Huntley Site was in the DEIS. I realize that mine alternatives to the use of the existing coal loadout facility at Huntley were evaluated. I question to what extent YOUR AGENCY (DSL) did your own evaluation as opposed to the information Meridian Minerals provided for your agency. I will attempt to support my concerns about the inadequacy of alternative sites analysis in the DEIS by citing the Montana Environmental Policy Act (MEPA). 69-1

Meridian Minerals considered 13 sites for a load-out facility. Under MEPA Section 26. 2. 642 (2) (a) (i); I believe all 13 of the applicants sites fall under this definition.

In recognition of Section 26. 2. 642 (2) (i); Section 26. 2. 649 (5) states in part..."an analysis of reasonable alternatives to the proposed action. including the alternative of no action and other reasonable alternatives that may or may not be within the jurisdiction of the agency to implement. if any"... Also MEPA Section 75-1-201 (1): Explains how the EIS "MUST INCLUDE", to the fullest extent possible, the analysis of alternatives. And that analysis must accompany the proposal through the existing agency's review processes. I do not feel after reviewing these regulations that MDSL has adequately addresses alternative load-out

627.0
app 144

sites in the DEIS!

In determining the scope of this EIS the agency may have benefited by including the Huntley Community Club's (HCC) impute into alternative sites by allowing the HCC to work more closely with the agency as prescribed in MEPA Section 26. 2. 647 (2) (a) (b) (c) (d) and especially (a). The HCC feels it has developed some ideas concerning other load-out sites that may have been beneficial in your analysis. MT Dept of Transportation offered a recommendation and several mitigation measures concerning the transportation issue, which the HCC feels should have been included in this DEIS. 69-2

Up to now it appears MDSL has accepted only Meridian Minerals impute which the HCC feels has been heavily influenced by Meridian Minerals financial position and support.

MEPA Section 26. 2. 649 (6) calls for an explanation of the tradeoffs among the reasonable alternatives. I feel that the public is entitled to know what the other alternative sites were. what the trade offs & what other sites had to offer.

Due to MEPA Section 26. 2. 644 (f) MDSL would be wise to consider more that one load-out site and all of the related impacts. especially transportation & human environmental elements. to insure that NO PRECEDENTS ARE SET BY THIS DECISION. FOR OTHER COMMUNITIES TO HAVE TO LIVE WITH.

The questions asked in the telephone survey. the answers. and to whom the questions were asked, should have been included in the DEIS as per MEPA Section 26. 2. 649 (10) (b) & (c). 69-3

The success of the Bull Mountains Mine # 1 seems to hinge on the use of a load-out site. MEPA Section 26. 2. 646 (2) states. in part..."The agency shall discuss the impacts of a proposed action in a level of detail that is proportionate to their significance"... Therefore I feel that the Load-Out sites must be more carefully analyzed and alternative's considered on a basis other that "Short Term". Many of the related impacts to the use of a load out site: mostly impacts to the human environment and transportation aspects. could have long term effects. The loss of just ONE Child or One Person would NOT BE short term affects.

Inclosing: IF MDSL would choose to include. in the Final EIS. a Supplement with at least (4) additional sites for a load-out. with the load-out facilities allowed a 30 day comment period. then a decision to permit the mine would not weigh so heavily on a temporary load-out. The Agency could permit the mine and choose a load-out which would not impact the Human Environment or transportation. so heavily. 69-4

MEPA Section 26. 2. 653 (1) (b) provides for a supplement to an EIS. As it stands now Commissioner Casey must choose between a 40 year mine plan. which could help stabilize one area of the state. and the use of a load-out, for 1-4 years. in a community which feels it is BEING FORCED TO BEAR MAJOR IMPACTS TO ITS HUMAN ENVIRONMENT AND TRANSPORTATION ROUTES. 69-5

Thank You.

Sincerely.

Steven M. Erb
Steven M Erb. Chairman
Huntley Community Club and private citizen.

Stacy Erb
Stacy Erb. Wife of Stevan Erb and Mother to Ashley (5) and Cameron (2)

70

Pete and Rhonda Tully
1196 East Parriott Cr Rd
Roundup, Montana 59072

October 2, 1992

RECEIVED
OCT 06 1992
STATE LANDS

Mike DaSilva
MT Dept of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. DaSilva,

The following comments contain additions or deletions I feel should be included within the Final EIS for Meridian Minerals Company's Bull Mountains Mine No. 1.

Chapter II, page II-1, Alternative 1; I feel this condition should be included; Condition No. 4- The operator shall submit a detailed evaluation of the life-of-mine area and its perimeter to the Agency identifying all springs, wells and groundwater that may be disrupted due to mine related subsidence and mine pumping (necessary to keep mine workings dry). This evaluation must include a detailed plan of mitigation enabling the operator to restore or replace all impacted waters, including groundwater, to their original quality and quantity. The Agency shall then require the operator to post a bond sufficient to cover the cost of restoration or replacement of these waters into infinity should they be irretrievably lost. The Agency should bear in mind that if this bond is not sufficient and the operator relinquishes it to the state, then the state shall be liable for all damages incurred. 70- 1

Chapter II, page II-4 and II-5; I believe the Agency should reevaluate the alternative method of permanent coal transportation from the mine, at its outset, using a conveyor belt down Rehder and Halfbreed Creeks to the Milwaukee right-of-way. Here the Agency should require a permanent coal load out facility with a state-of-the art covered tipple. The operator should be required to rebuild the old Milwaukee railbed from Roundup to Cushman. This alternative would eliminate both the public safety hazards due to trucking and the environmental degradation due to a new and unnecessary railspur. 70- 2

Capter III, page III-16; Although much of the water in the Bull Mountains is characterized as Class II water, it is generally suitable for public and private water supplies without treatment. Therefore, under law, the nondegradation standards apply. 70- 3

Chapter III, page III-21; The Agency should ask for a more recent elk herd count since elk tend to procreate and their numbers have increased significantly since 1978. I doubt the Fish, Wildlife and Parks would issue permits for half of the elk herdtobeharvested annually by rifle not to mention those taken each year during bow season. 70- 4

Chapter III, page III-42; The Bull Mountain Landowner Association is not a newcomer to the area. This group of mainly ranchers has been organized for over 20 years and has members whose families have lived here for generations. 70- 5

Chapter IV, page IV-2; Does the agency include water resources as reclaimed acres unavailable for postmining land use until the end of mine life? If so, this assumption is not within the law.

It is unreasonable to term a 44 year impact as short term. I believe the Agency should change the words "short term impacts" to read "mine life impacts". 70- 6

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Chapter IV, page IV-5; I would like the Agency to add their assumption of the cost of production per ton of coal for the life of mine.

Chapter IV, page IV-14; The Agency conclusion that impacts to stability of slopes and cliffs from mining eubsidence are "minor" seems optomistic if not entirely unrealistic in light of what actually may occur. I feel the wording should be changed from "minor" to "major". 70- 7

Chapter IV, page IV-17 through 23, No. 6 Hydrology; Somewhere within this section the Agency needs to include an evaluation of how much water will be pumped to keep the mine workings dry and where this water will be discharged. Within this evaluation the Agency needs to determine how this will impact the water rights held by othere and include how these impacts will be mitigated. Obviously, if water from the Mamoth and above are removed, those water supplies down gradient dependent up them will be diminished. Rather than pumping this water down some draw is should be reinjectsd back into the proper streta for continued flow down gradient.

Also, somewhere within this section, the Agency nseds to determine and then explain their determination as to whether or not the more important springe within the life of mine area are considered unique and critical and are not to be impacted under any circumstances. If mitigation measures do fail and these critical hydrologic resources are irretrievably lost then the original issuance of this permit becomes questionable. 70- 8

Chapter IV, page IV20-21, Water quality; If groundwater in the Bull Mountains is classed unfit for human consumption due to high levels of sulfatee and the subsidenca will increase sulfates even more, why does the Agency not perceive it possibls for this mine related contamination to curtail use of groundwater for livestock as well? Also, becaues groundwater in the Bull Mountains is now being coneumed by humans, any increase in contaminants would certainly limit present use. Therefore, the conclusion that impacts to water quality from mining and mining related subsidence should be changed from "negligible to minor" to "minor to major over the short and long terms". 70- 9

Chapter IV, page IV 30: Subdivisions may increase as a result of mine related influx of people. Therefore, wildlife numbers would decrease as a direct reeult of mining. 70-10

Chapter IV, page IV 36; The last sentence in paragraph five should be changed to read: "Impacts should be negligible over the long term unless the railspur is not constructed and truck hauling continuee indefinitely." 70-11

Chapter IV, page 43; All of these figures are based on full production and are misleading. Not many coal minss actually operate at full production, particularly when there is so much competition for so few contracts. 70-12

Chapter IV, page 52; I find it highly unlikely that should 7041 surface acres be progressively disturbed that they would return to equal or better than premining production capacity. This generelization should be deleted since there is no basis to back it up. 70-13

Chapter IV, page 55; Wherever the word "spring or springs" is used, the word "groundwater" should be added as well. 70-14

Chapter V, page V-6 and 7, Whitney Benefits; When considering this issue, the Agency entirely missed the point. Our concern is that enforcement of any State or Federal law in regards to this mine in the future may be jeopardized by this case since the mining company will have precedent to argus against any enforcement limiting their operetions as a taking of their property. Under this restraint, it becomee unlikely that the Stats or Federel government will vigorously enforce regulations against the mining company for fear of suit. 70-15

Chapter V, page V-7, Management; Line four should be changed to read "when Meridian canceled lease agreements." The word "if" should be dsleted.

Again the Agency refused to face the issue. Meridian Minerels cancellation of leases to local ranchers who opposed their project is of economic consequence and ie a direct result of the proposed mine. Meridian Minerals heavy handed attempts to coerce ranchere into allowing Meridian Minerals to impact the rancher's deeded surface while limiting damage settlements is very much relsted to ths proposed mine. The Agency failed to underetand the severity of these consequences because they neglected to consult anyone elss concerned other than the company. Unfortunately, ethics seem to play no part in mine analysis and permitting, a major drawback for the future of the Bull Mountains. 70-16

Appendix A, page A-5, Wetlands; The following eentence should be added to the end of this section on wetlands enhancement; "These activities shall not infringe upon the water rights held by other landowners outside of the permit area nor shall these activities damage existing development nearby." 70-17

Appendix A, page A-28, Land Use; I believe this assumption in paragraph three is an error, since both Johnsons and Charters have old improved pasture lands within the propoeed life of mine area. 70-18

Appendix A, page A-37, Revegetation; Does the Agency realize how difficult it is to control knapweed and spurge? Mowing is not an sffective control method. 70-19

Appendix A, page 41; I would like to see a dollar figure amount on this permanent truet and an accounting of the interested earned in the Final EIS. How will an adequate trust fund be maintained?

The Agency must establish parametsre upon interim water supplies. Water hauling becomes physically impossible at times and should not be allowed to carry on indefinitely. Page 41-c; If thsse springs disappear from fracturing, how does the Agency assume there will be any water left to tap with these horizontal dreins? Please clarify. 70-20

Appendix A, page 43 and 44; The Agency should bond for more than four wells within a life of mine area of approximately 14 sections. I would suggest using solar pumps on wells rather than windmills. Also, large underground storage and underground distribution on any system would enhance year around usage. Furthermore, I suggest the Agency not expend too much time or money on guzzlere since under optimal conditions they sre unreliable as a water sourcs. They do not work for livestock or wildlife as thie country goes too long between rains. 70-21

Appendix A, pags A45 through 47; This bank of wetlands will hardly take the place of wetlands loet miles sway in the mine area. Also, thess enhanceaent plans do not take into consideration property lines and water rights on already established wetlands off of Meridian'e property. I would liks to know whet is planned, specifically on springs numbered 41125, 11125, and 11115, and how the Agency plane to safeguard outside water rights and use. 70-22

On the whole, I believe that the Agency needs to go into greater depth on mine subsidence related damage including slope failure, fracturing, and surface and groundwater degradation. The final Environmental Impact State should address actual reclamation costs and subsequent bonding to cover those costs. 70-23

Finally, if there remains any doubt about the mining company's ability to coapletely restore or replace surface and groundwater to as good or better quantity and quality as it was prior to mining, then the Agency should disapprove the applicants proposal to underground mine in the Bull Mountains.

Sincerely,

Pete Tully
Rhonda Tully
Pete and Rhonda Tully

(71)

Musselshell Valley Development Corporation
P.O. Box 248
Roundup, Montana 59072

October 2, 1992

Mr. Mike DaSilva
Environmental Specialist
MT. Dept. of State Lands
Capitol Station
Helena, MT. 59620

RECEIVED
OCT 06 1992
STATE LANDS

Dear Mr. DaSilva;

The Musselshell Valley Development Corporation has been on record from the beginning of this EIS process, in support of the proposed Bull Mountain Coal Mine. It has been our belief that the DEIS, dated August 1992 absolutely does address all of the issues raised during the Scoping Process, and in fact includes many issues not raised in the Scoping Sessions.

We do not find any substantial errors in the analysis end assumptions that need to be commented about at this time. We have participated in the total process and have had ample time to provide input to the process. The final round of DEIS hearings in Huntley, Billings and Roundup were very well done, and several questions and clarifications were suggested. Since these will be responded to in the final EIS, it would be redundant to restate any of them.

Thinking back through the past 2 to 3 years, and studying the associated documentation, it is obvious that the overall conclusion should be that the only potentially significant effects on the human environment would be positive and beneficial, both in the short and long run. It is also obvious that there will be a few significant impacts in the very short run, though we believe that the proposal with suggested mitigation measures has made a genuine effort to minimize those impacts. This is a good project proposal.

When we cut through all the rhetoric, exaggerated statements and emotional jargon; just apply some common sense and look at the facts, this project, as proposed, will have less negative impacts on this area and this state, than most development currently occurring. It will also have less negative impact than many of the decisions that could come out of the 1993 Legislative Session, if history is any indication.

The Musselshell Valley Development Corporation wishes to express our thanks for the efforts of the Montana Department of State Lands in preparing this well done document. We strongly encourage approval of the applicant's proposal and hope that conditions, including those stated in Chapter II, are reasonable.

Thank you for the opportunity to provide comments about this DEIS.

Sincerely,

Donald E. Picchioni,
President

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Northern Plains Resource Council

(72)

Supplemental Comments of the Northern Plains Resource Council and the Bull Mountain Landowners Association on the Draft Environmental Impact Statement for the Meridian Minerals Bull Mountain Mine No. 1
October 5, 1992

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STATE LANDS

The following are supplemental comments on behalf of Northern Plains Resource Council and the Bull Mountain Landowners Association on the Draft EIS fort the proposed Bull Mountain Mine No. 1.

This Draft EIS is inadequate because it does not provide an Interdisciplinary approach to assessing and mitigating environmental impacts from the proposed mine. Most glaringly is its lack of consultation with the Montana Department of Health & Environmental Sciences Water Quality Bureau in its assessment of mining Impacts to water resources. 72- 1

The Montana Department of State Lands' lack of consultation with the Water Quality Bureau in its unnecessary haste to permit this mine has resulted in: inadequate assessment of the potential adverse impacts to water resources that will be caused by the proposed mine; inadequate mitigation measures to lessen the impacts of the mine on water resources; and the omission of data that, if provided, would most likely demonstrate the need for additional permits and exemptions under the Montana Water Quality Act. The Draft EIS is inadequate in the following areas.

The DEIS fails to address the need for aexemption from the nondegradation policy of the Montana Water Quality Act from likely degradation of to Class I groundwater (as defined by MT ARM 16.20.1002 according to specific conductance) that feeds 24 springs listed in Table E-2 as being potentially impacted by mining. Class I groundwater is protected by the Water Quality Act's nondegradation policy, and cannot be circumvented by lumping the Class I groundwater with Class II groundwater as is apparently the intention in the DEIS. 72-2

More data needs to be collected to determine the impacts on Class I groundwater, and a determination—with a justification—needs to be made as to whether a nondegradation exemption is required for the anticipated degradation of the Class I groundwater feeding the 24 springs listed in Table E-2. Additionally, there are discussions throughout the DEIS about lowering the quality of Class I groundwater to Class II, and Class II to Class III. Please explain why the DEIS is silent on the need for a nondegradation exemption for this anticipated groundwater degradation.

It is inappropriate to classify the 24 springs listed as Class I groundwater, when in fact they should be classified as surface water, and then appropriate surface water standards should be applied. This is significant because surface water standards are more stringent than groundwater standards. 72-3
Additionally, a determination should be made as to whether the proposed mining activities will cause 72-4

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mine waste discharges into groundwater connected to these springs requiring a surface discharge permit from the Water Quality Bureau. The EPA has determined that the Federal Clean Water Act requires such mine waste discharges to groundwater connected to surface water receive a surface discharge permit. If a determination is made that a surface discharge permit is needed, then any nondegradation exemption would have to meet the more stringent (than groundwater) requirements for not exceeding drinking water standards, and for protecting other beneficial uses, that are mandated in the Montana Water Quality Act and the federal Clean Water Act. 72-4

There are discussions in the DEIS about anticipated fractures in the shales from subsidence will result in contamination of surface springs. Such fractures could result in mine waste discharges into groundwater connected to surface water, and therefore require a surface discharge permit from the Water Quality Bureau. Better hydrologic studies—including baseline studies of the water quality and quantity of impacted springs—should analyze whether such discharges need a surface discharge permit, and whether a nondegradation exemption from the Board of Health is required that protects surface water quality standards and beneficial uses. If it is determined that these discharges do not require a surface discharge permit, an analysis should still be made as to whether a nondegradation exemption is needed to protect surface water quality standards and current and future beneficial uses as mandated by the Montana Water Quality Act and the federal Clean Water Act. 72-5

The permit application states that discharges will occur from the portal of the mine pool that exceed 3100 mg/L of dissolved solids. Such a discharge requires a surface discharge permit. Please explain why the DEIS does not require a surface discharge permit for this surface discharge, and why the agencies don't believe a nondegradation exemption is needed from the Board of Health for this highly contaminated water. 72-6

More baseline water quality data are needed for the springs or wells that are to be replaced by the highly contaminated mine pool water to protect water rights holders whose wells will be replaced. 72-7
From table E-2, It appears that springs with 542 TDS will be replaced with mine pool water of 3100 TDS. Are any of these springs or wells being used for drinking water? If so, alternative replacement options should be developed, since 3100 TDS is undrinkable. 72-8
Please explain whether the degradation of this magnitude is legally allowed for other beneficial uses such as livestock and wildlife. Please explain how such an enormous increase in contamination for wells to be replaced can be meet the water replacement requirements of the Montana Surface and Underground Mining Reclamation Act. Please develop other water replacement alternatives other than from the mine pool as proposed in the DEIS. 72-9

While groundwater discharges from mines are exempted from having to obtain a groundwater discharge permit under the Montana Water Quality, DSL is required by law to impose the same conditions for meeting groundwater standards in the coal mine permit as would be required by the groundwater discharge permit. Please explain how DSL plans to meet the requirements of the Montana 72-10

Ground Water Discharge Permit Elimination System.

Please explain how the applicant will implement Best Management Practices for all nonpoint sources of water pollution from the proposed mining activities. 72-11

Please explain how the Office of Surface Mining and the Bureau of Land Management will meet their legal requirements for permitting this mine under the National Environmental Policy Act, the Federal Land Policy Management Act, the Federal Surface Mining Control & Reclamation Act, and the Federal Clean Water Act. What will be the additional opportunities for public review under these and/or other federal or state laws? 72-12

Please provide more information and explanation as to why the DEIS concludes that there is no need for an Air Quality Permit from the Montana Air Quality Bureau. Does the Air Quality Bureau concur with DSL's determination that no air quality permit is needed? 72-13

Does the Montana Water Quality Bureau concur with DSL and the DEIS that no groundwater discharge permit, surface water discharge permit, storm water discharge permit, nondegradation exemption for groundwater, nondegradation exemption for surface water, are needed for this proposed mine? 72-14

Thank you for your consideration.

R. Dennis Olson
NPRC Staff

on Behalf of Richard Parks, NPRC Chairman

and

Ellen Pfister

Ellen Pfister, Bull Mountain Landowners Association

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(73)

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OCT 06 1992
STATE LANDS

October 5, 1992

to: Mike DaSilva, Environment Specialist, Montana Department of State Lands, Capitol Station, Helena, Montana 59620

from: Wilbur Wood, Natural Resource Writer, Box 12, Roundup, Montana 59072

regarding: Draft EIS for Meridian Minerals Company's proposed Bull Mountain Mine No. 1

(1) Water. Your EIS minimizes the effect of longwall mining on the aquifer and thus on the wells and springs and streams (intermittent though they may be) of the mining area. You understate the economic importance of a continual, renewable supply of water. Coal is a one-time product worth millions of dollars to extract and burn. But then it's gone. How many millions of dollars, or billions of dollars, is it worth to water wildlife, livestock, people and plants for the next one hundred, five hundred, one thousand, ten thousand years along the spine of the Bull Mountains? Your Department is in charge of the health and resources of lands in what is now Montana; you need to get better at estimating the true value of longterm health, the incalculable worth of renewable, as opposed to finite, resources. You should make sure that the mining company guarantees reclamation of water resources (but how can you "reclaim" a spring that no longer flows?) or at least guarantees replacement of lost water in perpetuity (but how can we enforce this for even one hundred years, much less one thousand or ten thousand?). To ensure that renewable water resources are not damaged by finite coal mining, the Department should really prohibit longwall mining here. But of course State Lands is unlikely to do this. Why? 73-1

(2) Economics. If you prohibit longwall mining in the Bull Mountains you effectively prohibit this project, at least in the immediate future. Of the other ways to extract this finite resource, stripmining seems out of the question (too much overburden in places, too much slope, too expensive and difficult to reclaim) while room and pillar style mining seems equally out of the question (too much coal left—to prop up the ground and reduce subsidence—and labor costs are too high). So you are probably not going to do what you should do, which is prohibit longwall mining. When Burlington Northern—in its guise as Meridian Minerals—lays out such compelling short-term interests, it is difficult for governments to grant equal weight to the long-term interests of the land. 73-2

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Wood to DaSilva—Comment on EIS—2/2/2

(3) Surface contours. What about the effects of longwall mining's so-called "planned subsidence" not only on the one hundred or so seeps and springs in the proposed mining area but also on the very shape and integrity of this sometimes rugged, slope-and-meadow terrain? Should Meridian Minerals be required not only to reclaim or replace water but also to reclaim damaged, eroding slopes? I would say yes. 73-3

(4) Transportation of coal. It is ridiculous to transport coal by trucking it on back roads and highways to the nearest railhead. For one thing, the costs to the mining company are incredibly magnified by this highly inefficient method of transportion. Plus, the impacts from dust, noise, increased road hazards, rapidly deteriorating roads, and potential pollution all along the route, are so enormous that they should add up to a quick denial of any transportation permit—even on a supposed short-term basis. It seems reasonable to require the mining company to build the railroad spur it talks of building to the mine before it begins hauling coal out of the mine. 73-4

(5) The railroad spur. This itself is another issue, with its own set of impacts that need to be addressed. Who permits the railroad? Who allows the railroad the power of eminent domain, to condemn lands for its own use? Who will ensure that these lands remain undamaged during and after the life of the mine? 73-5

(6) Reality check. It has seemed clear from the beginning of this process—certainly from the time that the Bureau of Land Management allowed the coal-for-land swap and set in motion this State Lands EIS—that BN/Meridian would attain all its required federal and state permits, eventually. The question is, once all the permits are in, will the investors in this project actually begin mining? Coal which is virtually the same quality—but from much larger seams and with a railhead already at the mine—currently can be bought in this region for one-third to one-fifth the price BN/Meridian says it must earn to make this mine profitable. If the price of coal goes up overnight, then perhaps BN/Meridian will open up a mine tomorrow. But what if they don't? Does this State Lands permit lock BN/Meridian into 1990s terms forever? If better mining technology, for instance, evolves by 2020 A.D., will BN/Meridian still be allowed to mine using 1990s technology? Can this permit be renewed as automatically as it seems about to be granted? I hope not. —Wilbur Wood 73-6

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(74)

WASHINGTON CONTRACTORS GROUP, INC

[illegible]

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OCT 06 1992
STATE LANDS

October 1, 1992

Washington Contractors Group

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Ref. No. WCGI 92.082

SUBJECT: Draft Environmental Impact Statement
Meridian Minerals Company
Bull Mountains Mine No. 1

Mr. DaSilva:

We have reviewed the draft EIS for the Bull Mountains Coal Mine and submit these comments specifically in support of the reclamation plans detailed in Appendix A.

We reference sections F.6 through F.9 of Appendix A that address revegetation and water quality topics. As an earthmoving construction company operating throughout Montana and the West, we concur with the various mitigation methods noted in the document.

Our operations involve a significant amount of highway construction for the Montana Department of Transportation as well as reclamation work for private companies. These projects involve activities addressing erosion control, revegetation, and water quality control. One project of particular interest has included restoration of a stream by constructing meandering channels, wildlife ponds, and islands. Surfaces were topsoiled and will be revegetated. Current seeding, fertilizing, and water resource replacement practices utilized by government and private sector groups correspond with those methods listed in the EIS.

We concur with the reclamation plan described in Appendix A.

Respectfully,

D.K. Zinke

David K. Zinke
Senior Estimator
/kah

David P. Becker
Business Development Coordinator

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A Washington Company

(75)

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OCT 06 1992
STATE LANDS

JANICH RANCH, INC.
484 Old Divide Road
Roundup, Montana 59072

October 3, 1992

Mike DaSilva
Environmental Specialist
Montana Dept. of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. DaSilva:

RE: Letter of August 31, 1992
Draft of Environmental
Impact Statement

In reviewing the subject Environmental Impact Statement, I feel that additional consideration should be given to the impact of the coal transportation on the Old Divide Road.

This road and approximately 24 households along it will be greatly impacted by noise, dust, and safety (it is also a school bus route). I own land on both sides of this road and have lived here all my life. We move livestock across, on, and along this road at present and in the past. Our use of the road for this purpose was interrupted during the test pit hauling. We are now able to move our livestock across and over this road without any problems. Also, this is a prime area for game animals (Bud Comly, State Game Warden) which cross the road in numerous places on a daily basis. 75-1

Aside from the impacts and dangers to people and animals, the road itself has not been designed for, nor can it sustain heavy traffic involved in coal hauling. This was proven during the coal test pit trucking period. Musselshell County has neither the funds, equipment, manpower, or expertise (Musselshell County Budget) to construct a road capable of this heavy hauling use. 75-2

Running these coal hauling trucks on an unsafe roadway that is parallel to Highway 87 is neither feasible or necessary. The trucks could be routed straight out to the highway approximately one mile on the existing portion of Old Divide Road if it were improved. Another alternative is that Meridian could build their own road along their proposed railroad right of way to the highway. 75-3

We ask that you consider the above alternatives as a condition to granting this permit.

Sincerely,

Nick Janich

Nick Janich
JANICH RANCH, INC.

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(76)

10-5-92

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OCT 06 1992
STATE LANDS

Dennis Casey, Commissioner
Mike DaSilva, Environmental Specialist
MT Dept. of State Lands
CapitolStation
Helena, MT 59620

I disapprove of the proposed mining plan outlined in the Draft E.I.S. for Bull Mountains Mine No. 1 as it does not analyze an alternate loadout site.

Règarding transportation, Chapter IV, Pages 32-33-34-35-36. I feel the haul route from the mine to Huntley was not properly considered in regard to the increased traffic hazards. A letter to your office from the Dept. of Highway, dated December 23, 1991 recommends that Meridian Minerals pursue other loadout sites. Portions of the letter I feel should be given more consideration, will be enclosed with this letter. 76-1

Is Montana Department of State Lands willing to accept the liability risk involved by allowing the Huntley haul route to be used, after the Department of Highways recommended the use of an alternate site? Use of the proposed route could also cause undo financial burden on the Taxpayers of Montana, when accidents involving coal trucks, school buses and exsisting traffic become more than just a possibility. 76-2

I feel the primary reason Huntley was chosen was the low start-up cost. Meridian Minerals has nothig to gain but millions of dollars profit on this mine. I feel from the liability standpoint it would be cheaper for the Department of State Lands and Meridian Minerals to pursue a different loadout facility.

If the Huntley loadout has to be used, I request it be used for no more than 2.5 to 3 years, from start-up to reclamation. 76-3

I would appreciate your serious consideration in this matter when writing the Final E.I.S.

Sincerely,

T. J. Mueller

T. J. Mueller
P O Box 142
Huntley, MT 59037

627.0 app 144

DEPARTMENT OF HIGHWAYS
STAN STEPHENS, GOVERNOR
STATE OF MONTANA
2701 PROSPECT AVE.
HELENA, MONTANA 59620

November 18, 1991

Bonnie Lovelace
Strip Mining Bureau Chief
Montana Department of State Lands
1625 Eleventh Avenue
Helena, MT 59620

Page 2

Local road 312 from the junction with U.S. 87 to Huntley was U.S. 10 until it was replaced by Interstate 90 about 20 years ago. Maintenance of old U.S. 10 remained with the MDT even though all federal aid funding ceased. Local road 312 is called an orphan route because it is no longer on any type of federal aid system. Any type of future funding for major improvements on 312 would have to come from the Reconstruction Trust Fund (RTF). However, all the RTF funds that will be available through June of 1993 when the program ends, have been committed to projects.

If the coal trucks travel on 312 for a period of 30 months, normal maintenance procedures may not be adequate to save the existing surface. Any attempts to improve 312 before the coal trucks begin running is, therefore, just not possible. Based on our Materials Bureau reports,

OTHER POSSIBLE IMPACTS

Page 3

1) Jct. with U.S. 87 and local road 312. Once the coal trucks reach the full production mode, the truck drivers turning off U.S. 87 turning east towards Huntley may have difficulty pulling out into the intersection during rush hour traffic. Our Traffic Section has evaluated this intersection and have determined that traffic volumes meet minimum requirements so that a traffic light might be considered. However, they have made the determination that a traffic signal is not appropriate at this time. Also, those trucks turning off 312 onto U.S. 87 heading back to the mine, may experience some off-tracking problems. The free right-hand turn may be restrictive for the coal truck drivers.

   There could be some capacity and level of service problems at this intersection during rush hour traffic. See the attached capacity chart.

2) There could be potential conflicts with school buses.

3) Accidents with coal trucks could become a major problem, especially during the winter months.

Page 4

6) During Meridian Mineral's "test burn" conducted from January 1990 to October 1990, several motorists complained that coal dust coming off the coal trucks obstructed their vision. This was brought to Meridians attention and they have told us that all the coal trucks would be covered with "Air Foil" windscreens to prevent this from happening. We have reservations that this may not be adequate.

Page 5

RECOMMENDATIONS
The MDT has no legal authority to regulate who can or cannot use those routes open to traffic by the general public. The only legal authority that we have is through Gross Vehicle Weight permits where we can regulate the size and weight of a truck and through encroachment permits or standard R/W 20 forms. As stewards of public transportation, we can only advise of where there could be potential impacts and make the appropriate recommendations.

Because of projected increased maintenance costs, projected decreased pavement life, projected decrease in available funds, anticipated decrease in level-of-service and an anticipated increase in the accidents for the component route segments; the MDT would prefer that Meridian Minerals would pursue other load out sites such as Acton or Broadview rather than Huntley.

(77)

YELLOWSTONE VALLEY ELECTRIC
Cooperative, Inc.

HUNTLEY, MONTANA 59037
Telephone (406) 348-3411

October 5, 1992

RECEIVED
OCT 06 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capital Station
Helena, MT 59620

RE: Meridian Coal Mine Written Testimony

Dear Mr. DaSilva:

Enclosed is a letter submitted to Fergus Electric Cooperative by Yellowstone Valley Electric Cooperative's board president.

The letter acknowledges the positive economic impact the mining project will have within the surrounding counties. The letter also states the concerns our Cooperative's board has regarding the coal loadout facility in Huntley.

Please accept the enclosed letter as written testimony of the position of Yellowstone Valley Electric Cooperative's board of directors regarding the Meridian Mining Project.

Sincerely,

Terry M. Holzer
General Manager

627.0
afp 144

YELLOWSTONE VALLEY ELECTRIC
Cooperative, Inc.

HUNTLEY, MONTANA 59037
Telephone (406) 348-3411

September 29, 1992

Mr. Larry Descheemaeker, Board President
Fergus Electric Cooperative, Inc.
HC 85 Box 4040
Lewistown, MT 59457

RE: Meridian Mine Project

Dear Mr. Descheemaeker:

At our regularly scheduled Board Meeting, held September 22, 1992, I discussed your September 14th letter which was addressed to me.

In your letter, you highlighted the economic benefits the Meridian Mine Project would bring to the counties surrounding the mine location. We are pleased to see that Fergus Electric Cooperative will be the power supplier for the mining development. As noted in your letter, the addition of this industrial load will have a significant and positive impact on Fergus Electric Cooperative. As well, Central Montana G & T and our Cooperative will also see positive effects from the economic impact of the project.

Yellowstone Valley Electric Cooperative's Board of Directors supports the Meridian Mine Project. However, our Board is also concerned about the air and noise pollution and traffic problems which will accompany the temporary load-out facility in Huntley.

Even though it is projected that the Huntley load-out facility will be a 2 to 3 year period, the negative impacts to the community could be significant.

For this reason, our Board passed a motion stating the our Cooperative supports the Meridian Mine Project, provided the concerns of the Huntley residents are addressed.

Mr. Larry Descheemaeker, Board President
Fergus Electric Cooperative, Inc.
September 29, 1992
Page Two

I hope this letter provides a clear understanding of our Board's position regarding the Meridian Mine Project. Please contact me if you have any further questions or if I can be of any further assistance.

Sincerely,

James W. Heimbichner

James W. Heimbichner
Board President

JWH/jas

The Bull Mountain Landowner's Association (78)

October 5, 1992

RECEIVED
OCT 06 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
MT Department of State Lands
Capitol Station
Helena, MT 59620
Re: Comments on the Bull Mountain Mine No. 1 DEIS

Dear Mr. DaSilva,

The Bull Mountain Landowner's Association wishes to reiterate its support of the following points:

1. Realistic bonding and a permanent trust fund to restore water resources likely to be disrupted by mine subsidence both on-site and down through tributary drainages.

2. Realistic bonding and a permanent trust fund to stabilize slopes and control subsidence-caused erosion

3. Disapproval of interim coal hauling to Huntley as a threat to public safety. Require coal transportation from the outset to be by conveyor or truck, built down Halfbreed Creek to Roundup and then by a common carrier rail spur built from Roundup along the old Milwaukee right-of-way to the mainline at Cushman. 78- 1

4. A state-of-the-art covered tipple for the coal loadout.

5. Formal notice given to interested parties on development and revisions of permit requirements upon request.

and wishes to submit the following additional written comments and exhibits on behalf of the BMLA and the Northern Plains Resource Council for perusal and consideration.

Sincerely yours,

Ellen Pfister

Ellen Pfister
926 Yale
Billings, MT 59102

627.0
afp 144

An affiliate of the Northern Plains Resource Council

Comments
Draft Environmental Impact Statement
Bull Mountain Mine No. 1
Meridian Minerals
By: Ellen Pfister on behalf of Bull Mountain Landowners
Assn. and Northern Plains Resource Council
926 Yale
Billings, Montana 59102
October 1, 1992

1. It would have been useful to have had a map in this
document showing the relation of this proposed project to 78- 2
the balance of the Mammoth-Rehder coal deposit in the Bulls
This is styled the No. 1 Mine, which implies a sequence of
mines. If this is to be the case, then portions of this
project, particularly regarding transportation are
inefficient and inappropriate. If a sequence of mines does
become reality, then, when the committment is made to this
mine, it is actually a committment to a much greater impact
in many areas. With the exception of about six sections of 78- 3
coal immediately south of the mine plan, the rest of the
coal is the checkerboard pattern of Burlington Resources and
United States, and would be subject to lease by application
at the present time. The mine plan strikes me that it could
be very easily adjusted to the north or south, and still use
the same facilities minemouth. Would such extensions be
considered new permits or extensions of an existing mine
permit? What are the triggering distinctions between the
two?

2. Figure I-3, p. I-5, Section 32, T 6 N, R 27 E is all 78- 4
Federal surface, 160 acres Federal mineral estate as shown,
and 3/4 mineral estate as shown in Meridian Minerals.

2. Page I-4. The mineral ownership at the end of the
first paragraph should read that 3150 acres of mineral
within the five year permit application are privately owned 78- 5
and 960 acres are federally owned. It should also be noted
that none of the federally owned mineral acres will be
mined.

3. Page I-4, Line 8. The word "could" is used in
discussing the possibility of surface subsidence. Webster's
Ninth New Collegiate Dictionary defines "could" as " an
alternative to can suggesting less force or certainty. . ." 78- 6
The selling point for longwall mining is that subsidence is
a predictable certainty. The affects of subsidence are what
is in contention--not that it could occur.

---

4. Table I-1, page I-6. Please explain the difference
between the figure of 7,552 acres listed for coal removal 78- 7
during the life of the mine and the total acreage listed as
disturbed surface under coal removal. Of what does the 1403
acre discrepancy consist? Under the mine plan, all areas of
coal removal are scheduled to eventually subside with the 78- 8
possible exception of the mains. Are the mains scheduled to
subside as well? If so, will pillars be robbed to hasten 78-9
the process on final retreat?

5. It should also be noted on Figure I-3, p. I-5, that
some of the proposed wild life enhancement areas are located
on adjacent landowners other than Meridian, and may not be 78-10
well received. Maps such as this one should show Meridian's
ownership and/or control of surface, rather than just
assuming that all private ownership is monolithic.

6. Page 1-7, Table I-2. On mine plan maps in the permit, 78-11
the last year shown for mining is year 35 with the longwall
machine, which is a longer time frame than shown here.

7. Page I-6. why are so many acres in the coal buffer zone
of the mine plan, particularly in the Hidden Springs 78-12
Subdivision area in the Northeast zone? As of 18 months
ago, all lots in that subdivision were sold.

7. Page II-1. With respect to Condition No. 1, it would
be possible now to map the areas with potential for steep
slope subsidence problems, and begin to address how to deal
with the potential problems. Please define what is meant by 78-13
"subsurface deposits". Do Conditions 1,2 and 3 pertain only
to archeology? There may also be problems between
archeological mitigation and reclamation techniques. I would
like to see a map correlating steep slope problems and 78-14
proposed reclamation techniques. This problem has been
inadequately addressed all through this document. By my own
rough calculations with an electronic scaler, there are at
least 30 linear miles of such slopes within the life of the
mine plan. This is the only time within the permitting
process that the public will be presented with an overall
opportunity to comment on the extent of the problem. In
addition to the problem of slope instability, the 78-15
fundamental makeup of the rocks comprising the hills will be
altered from a relatively continuous sediment laid down over
time to a fractured and broken base with highly increased
permeability. Since the Bull Mountains do not lie close to
an earthquake fault zone, the probability of the kind of
internal rock damage done by subsidence occurring by any
natural force is low to nonexistant. I also do not
understand the why of listing only these four particular
conditions. It seems like kind of a short, strange list.

8. Page II-3, Lines 1-5. Is "mine site" equivalent 78-16
terminology for "life of mine plan"? If so, has Meridian

---

applied for and received any State or Federal coal leases? 78-16
It is my understanding that it may own the majority of the 78-17
resource, but it has yet to lease about half the coal beyond
the five-year permit area.

9. It is not my impression that dismissal of discussion of
alternatives should be lumped in a wad and casually shunted
aside without more detail than is shown on page II-3,
particularly with regard to transportation. The first
variable listed in the factors for negative consideration is
"increased cost of construction." I think that is the real
reason for the selected temporary load out site. A paper
entitled Draft, Bull Mountains Mine No. 1, Temporary Loadout
Facilities, Alternative Sites Summary, January 31, 1992,
reviewing the conclusion of a site review team comprising
Robert Ochsner, Mike Dasilva, and Anne Cossitt, visited 11
proposed loadout sites. At $135,000.00 Huntley was cheapest
to Meridian, but no estimate was made of the total costs
public and private.

There was no actual estimate of costs to Meridian for
the Coors site. It would mitigate the direct impact on the
Town of Huntley. It would not mitigate the impact on 312 or
public safety.

I am intrigued by the differance in road discussion
between the Huntley and the Acton site. The 12 miles of
"unimproved" road are graveled, much as is Fattig Creek
road. Somehow Yellowstone County can force Meridian to pay
for the upgrading of the Shepherd-Acton Road, but a much
more highly traveled road, 312, stands alone. I also find
it hard to compare the impacts on the Acton Bar with the 78-18
Huntley problem. The trailers in the Acton area lie quite a
ways east of the Railroad. There would be some saving in
truck transportation to use towards site devlopment. Acton
comes in at $1.467 million.

Commanche comes in with a price tag of $2.205 million,
probably due to more Yellowstone County Roads. Commanche as
a settlement is even harder to find than Acton. Commanche
and Acton have the same disadvantages with a higher fire
danger and greater problems with fire suppression. -

The Broadview site has population in the direction of
prevailing wind and 23 miles of road to upgrade with total
cost of $1.860 million.

The South of Broadview site has no cost factors, but
also, few people to impact. It would be a difficult fire
suppression site.

All of the sites on Montana Highway 3 would carry a
decreased liability factor from the mere fact of less public
exposure to traffic accidents by getting the coal truck

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traffic off Highway 312. What kind of liability costs has 78-19
Meridian factored into their expenses for transporting coal
off premises on public highways?

Belmont costs factors are $1.750 million, and it too
is a water short site.

Lavina would have upfront costs in the amount of $2.423
million, including some trackage construction.

Cushman would be the next longest truck haul with 2.8
miles of gravel road and the need to rebuild a local bridge.

Mossmain would be the longest haul (52.1) miles and the
second cheapest to develop. $330,000. The actual road route
to get to Mossmain was not discussed, so it was not apparent
if Highway 312 was involved.

Roundup had the closest route to the mine--15.8 miles,
although that could probably be cut by coming directly down
Rehder Coulee to U. S. 87. The estimated cost of devlopment
is $6.750 million, which initially seems high until one
realizes that in addition to loadout construction, rolled
into this figure is also the cost of the permanent railroad
haulage out of the coal field. Far less than the million
dollars per mile for the 33 miles to Broadview. The
major problem with the $6.75 million is that it is upfront
money, not the total cost. The rebuilding of the railroad
on the Musselshell would carry with it an additional 78-20
benefit--it need not be a one commodity railroad. Meridian
could seek financing from Musselshell County in the form of
industrial revenue bonds if the line were open to such other
commodities as might be shipped. Alternatively, Meridian
might agree to give potential buyers a price break for a
capital advance to rebuild the road, the price break to end
when the railroad was costed out against purchases. It would
give Musselshell County an investment to try to get other
business interested in Roundup as a shipping point--such as
a unit grain train elevator. If the railroad were built as
the mine construction went forward, it would eliminate the
problem with the temporary load out site. The load out and
rail line would be in a community that wants that kind of
development and impact. The Roundup location would put the
railroad in an area where water would be avilable for fire
suppression and under greater public scrutinty to catch
fires started by trains while they are small. The Hawk
Creek fire of 1984 started on the ridge where Meridian is
currently talking of putting its proposed rail route. In
house consultation with Don Kendall and the State Fire
Marshall's office might prove valuable. There should be a
map of the proposed railroute showing the proposed county
road crossings and relocations section by section to
Broadview.

The old Milwaukee road bed is all ready disturbed. The
amount of disturbance to bring that back would be minimal
compared with fills on the Broadview route and five hundred
foot rights of way to get enough dirt to build them coupled 78-20
with some other engineering problems mentioned in the OEIS.
There is also the factor that at the end of 30 years, there
will be two abandoned railroad beds leaving permanent scars,
since the state of Montana will be the only entity lucky
enough to have the road bed leveled out on their land.

One of the scars will be the livestock underpass shown on
page A-7, Figure A-7, dividing ranches. They ice up and get
slick inside. They are especially dangerous to horses and
riders. The noisy reverberations inside can spook even a
gentle horse. Sometimes they are constructed with the nut
end of the bolt inside the underpass, and that can peel up a 78-21
horse if it tries to turn around or gets spooked. A rider
leading a horse through can be run over by the horse. The
proposed passages are only 5 feet wide. With the railroad
right of way fenced, horses and riders don't have many
options.

With the attitudes toward this project in the immediate
Roundup community, and most of Musselshell County, it
would seem to be no problem to get rights of way at reason- 78-22
able prices, perhaps even donations; so the number of land
owners with which Meridian would have to deal should not be
a problem. If this is not the case along the reaches of
Halfbreed Creek and the Musselshell River, then Roundup is 78-23
in the position of wanting jobs and having other people
suffer the nasty affects for them, while Musselshell County
gets the money, especially tax money from the mine.

The only way to mitigate some of the front end impacts for
the preferred Huntley loadout would be with grants from the
Coal Impact Board with severance tax money. That pot is not
inexhaustable, and this mine would pay in very little to
reimburse the large public impact that it will have with the
Huntley option. Other portions of the coal industry that
are contributing more may not be too appreciative, as well
as other impacted communities.

The reconstruction of U.S. 87 just about ruined Halfbreed
Creek as a wetland area. It is now a damaged wetland with
oxbow loops cut off from the rest of the creek by the
highway. To concentrate coal haulage or transportation in
some form in the corridor of Halfbreed Creek and the 78-24
Musselshell River would at least confine the damage to areas
all ready impacted rather than spreading it out over more
country and leaving permanent scars for a short term
project. After all, the rest of the coal deposit lies to
the North and east of the current project.

10. Page III-2, Figure III-1. One year of windrose for the 78-25

Bull Mountain area is hardly sufficient to predict air
quality paterns. It would also heavily depend on the
topographic location of the monitoring device. For the
years 1985, 1986, and 1988, the prevailing summer winds on
Section 22, T 5 N, R 27 E on the southern edge of the Bulls
were Southwesterly. For the past two years we have been
having many more Southeasterly summer winds than usual.
Northwesterlies are the prevailing winter winds, but terrain
can weaken them substantially--even inducing calms. Wind
patterns are important if one is talking about possibly 78-25
mitigating water problems with windmills. We have
experienced calms lasting as long as a week to ten days in
both winter and summer. Generally speaking, most of the
areas within the mine plan are not good windmill areas, due
to lack of wind. Those with good wind potential are
probably a long ways to water. I also suspect that areas
with poor wind availability for windmills will also
concentrate other pollutants within the immediate area. I
think the location of the facilities for the mine in Section
13 will probably have trouble dispersing pollutants. I do
not know where this wind monitor was located, but one should
have certainly been located at the potential mine facility
site.

11. Page III-7 discusses the total coal reserve within the
life-of-mine area--218 million tons. Have the other seams
above the Mammoth been tested for sulfur content, BTU's etc?
Are these other seams actually recoverable after full 78-26
extraction mining beneath them? If so, by what methods?
Isn't the usual method to use full extraction working down
from the shallowest seam to the deepest sesm? Wouldn't roof
stability be a problem going from deep to shallow? Are
these minable or racoverable reserves?

12. Page III-12 and subsequent are the Hydrology
discussions. In discussing well yields in the Bulls, the
general gallonage is given as 10 to 30 gpm. On the Southern
and Western flanks of the Bulls, the production is
frequently 5 gpm and less. We have one well in Sec. 5, 78-27
T5N, R27E in the 10 gallon range, but that is very rare on
the South side. With the underground flows in a general
northwesterly direction, where are the recharge areas for
the Bulls? Does the southeasterly-northwesterly flow extend
all the way to the Yellowstone? What class of water could 78-28
be expected from the Fox Hills-Hellcreek formations under
the Bulls? Where are the recharge areas for the deeper
aquifers mentioned? If people in the Bulls do have to go to
those aquifers, they may wind up being junior water rights
holders. Draw downs in those aquifers could be coming from 78-29
other areas. Judging from the difference in production in
wells on the South side and the North side of Dunn Mountain
one could surmise that the higher elevations in the Bulls
recharge a great deal more than just the springs. What
Class of water will come from the deeper suqifers under the 78-30
Bulls?

13. The water quality is averaged for the "area" page
III-16. I am not sure what the "area" is. All water is
grouped as Class II. In table E-2, there are a total of 24
springs that on Specific Conductance alone would fall into
Class I category. 15 of those springs are within the life
of the mine, clustered in four sections. The other nine
springs lie immediately North or South of the mine plan. It
would seem that these waters would stand a good chance of
being degraded. The springs are as follows: 14115, 14155
14165, 53115, 5312S, 16135, 71115, 7112S, 1614S, 16165,
16255, 16275, 1635S, 16365, 1763S, and 4121S, 5252S, 5253S,
17115, 17145, 17215, 17255, 7211S, 7312S. The rest of the 78-31
data was unavailable to examine further. At least some of
these springs are close to the depths for fracture zone
damage. Most of us who live in the Bulls are drinking Class
II water, as is probably most of Eastern Montana.
But it is probably the better end of Class II, as opposed to
its lower end. I suspect that degrading the water from the
top end of Class II to the bottom end of Class II is a far
greater degradation than degrading Class I water into the
top 25% of Class II. Will Class I water be mitigated with
Class I water? What is the affect on livestock drinking 78-32
water at the bottom end of Class II water?

Page III-16 mentions the deep bedrock flow to the springs.
It is that flow which makes the Bull Mountain Springs more
than seasonal flashes in the pan. Fractured, weathered
bedrock flow is probably the most important part of the flow
cycle, because it makes a good spring dependable in
July, August, and September when all four legged creatures
need water most. The big flows in the spring, probably go
into recharge to be used somewhere else down the
line--either in another spring or recharge to deeper
aquifers for wells.

There are no technical tables given for water well quality
or locations of existing water wells, including one that was
mentioned as a potential mitigation well. There is certainly 78-33
one well being used for domestic water within the five year
permit area. Well data should be given for location, water
quality and quantity.

Are the only tests that have been done to predict
post-mining water quality the ones done by Keith Thompson in
his Open-File Report, MBMG 100, dated August 1982? His
prediction for underground mine spoils water on page 42 are
well into class III standards on TDS. The sulfate levels
are way up. High sulfate levels in water cause copper 78-34
shortages in cows. The mitigation measures are chelated
copper supplementation and/or cupric glycinate injections
once or twice a year, depending on degree of severity. If
copper deficiencies are not corrected in a cowherd, they
fail to thrive, and can die. To deliberately cause sulfate

problems is a serious damage both to the cattle and the
people who own them.

14. The hydrology discussion on Page III-12 taken with the
impact to water discussion on Page IV-20 and 21 concludes
that there is no signifigant impact to degrading water in 78-35
the mine are from Class I to Class III, or from the top end
of Class II well into Class III. Does non-degradation apply
only to hardrock mining areas?

Are the only chemical analysis Meridian did of the waters in
the area the ones based on the 1989-1990 sampling dates or 78-36
are there later data?

Given the predicted concentrations for underground mine
spoils on Page 42 of Thompson's report, as follows:

	Range (mg/L)	Mean (mg/L)
Ca	46-150	83
Mg	33-110	96
Na	460-1840	920
SO4	780-3000	1510
HCO3	540-2050	1060
Dissolved solids (calculated as residue)	1580-6110	3100

78-37

we think that signifigant deterioration of water quality
will occur. The OEIS presents no data to rebut that
prediction.

Nowhere in this OEIS do I find an estimate of the amount of
increase of permeability in the overburden induced by
subsidence. I understand that it increases from 10 times to
1000 times. Even at ten times, the recharge will
go to the mine floor faster. The material that is in the gob
zone will be fragmented and readily available to dissolution
in the incoming water. The materials that I have seen
adjacent to the coal don't look like the kind of material to
make good water. When the mine closes and the mine pool 78-38
begins to fill that material will be saturated with water
which will stand there in the gob because it cannot proceed
downdip in its accustomed aquifers as rapidly as it
infiltrates through the fractured rock above. Since the
mine entrance is at ground level, the whole mine pool will
pressure against those entrance seals. What will be the
quality of the water discharged from the mine pool? What
plans are there to treat it? If Thompson's predicted 78-39
concentrations are any indication, it doesn't sound like
very good water quality. Have other chemical paste tests and
studies been done that negate or modify Thompson? If so, 78-40
who and what ?
On page IV-21 the OEIS authors conclude that the water will
remain suitable for wildlife, agricultural, and livestock 78-41
uses. On Page E-7, the Montana groundwaters for class III

78-41 standard says that Class III may be used as drinking water for some wildlife and livestock (I would appreciate more delineation and definition) and for irrigation of some salt-tolerant crops using special water management practices. What does this mean for downstream water users if the mine is simply allowed to spill the mine pool out 78-42 through a pipe with no treatment? Class III agricultural practices sound like the Imperial Valley of California. What negative impacts do Class III waters have on livestock and wildlife?

78-43 Mr. Thompson's conclusions can be quoted to soothe the troubled mind, but his figures are not very comforting. His conclusions also accept the degradation of water for an unspecified length of time. His conclusions for off-site users are no better . . it will be a while before it gets there. so to not worry. For whom? the mining company or the offsite water user?

78-44 15. Page IV-20 has a sentence that reads as follows:

> Mitigation systems would have the potential to provide water for longer durations during the year than springs naturally provided.

If one has a spring that provides year around water, how can it provide more than year around water? What the mitigation plan proposes to do is to rob Peter to pay Paul, providing 78-45 Peter has anything left when this is all over. The springs that are proposed to be most of the mitigation source will be among the last undermined. I see no effective mitigation plan in case of their loss. The water damage predictions for this mine are almost 180 degrees different from the Eastern experience, and based solely on the hope of younger geological age shales mitigating the affects of subsidence. There is no attempt by the authors of the DEIS to calculate the depth of the various zones of subsidence. Io the low overburden areas over half the overburden may be within the fragmented zone. The fractured zone could extend another 650 feet. Between the two zones that could take in all the overburden in this mine. An extensive fracture zone and ill-placed cracks from the angle of draw could very well turn the mitigation plan upside down. To deny that it could happen and not to plan for such an eventuality is very foolish. Subsidence is not a one time happening in the mine plan. The pillar areas receive subsidence shocks as the panels on both sides are subsided and also as they finally subside. According to Allgaier at Deer Creek Mine in Utah, the first panel mined got another jolt as the second panel subsided. Is the water modeling on subsidence based on the Illinois farmland subsidence references noted on page VII-1? I don't know of many high perched springs in Illinois. The overburden is evener and deeper in Illinois. The overburden in Utah ranges from 700 to 1500 feet. As of December 1990,

extensive undermining of the escarpments on the Wasatch front had not been allowed. and one experimental undermining of a portion of stream channel had been allowed. The portion of the stream that was undermined disappeared and surfaced again further down stream in the normal stream channel. The land being mined was Forest Service lands, and as nearly as I could ascertain from the discussion, lacking ground water to develop. The Forest Service was using guzzlers for wildlife. I do not know if there were livestock permittees in the area. If there were, their interests certainly didnot enter into discussion. The State of Utah showed slides where it had ordered fencing in angle of draw areas to keep the public away from the crevices reaching to the surface that didnot heal and were adjudged to be too dangerous to be left unbarricaded. These discussions took place at an American Mining Congress meeting which I attended in Salt Lake City in December 1990.

78-46 16. What relationship to the Bull Mountain Mine No. 1 does the Permit Application Package for the Deserado Mine have. It is cited on Page VII-3 as a supporting portion of the bibliography. The Deserado Mine is in Rio Blanco County, Colorado close to the Utah border on BLM land mining Federal coal. It is mining 1 ½ million tons of coal a year from the Mesa Verde formation taking coal 12 to 15 feet thick from overburden varying 800 feet to 1200 feet, depending on topography, in a high plateau sagebrush, pinon, juniper country. The outcroppings are sandstone. The soils and water in the area are saline. There is one flowing stream in the mine plan. The underground mine water is being discharged to a dry gulch and is very saline, as the mine has run into old seawater. The coal is hauled out of the mine area by an electric railroad to a power plant at Bonanaza, Utah, 35 miles. The power plant and the mine are owned by the same entity. The area is permitted for sheep grazing, and the sheep depend on stock ponds. The mining is advancing in the direction of the ponds, and the outcome of what will happen is in doubt. This information was obtained from Janet Binns, Colorado Mined Lands, in a telephone 78-47 conversation October 1, 1992. Citing an entire mine permit application in a bibliography is sort of like citing Funk and Wagnalls Encyclopedia without citing volume, page and entry.

78-48 17. Almost half of the material cited in the subsidence portion of the bibliography was private reports prepared for Meridian. Those are not open to public scrutiny. Allgaier's report at the Deer Creek mine dealt with substantially more overburden. According to Dr. Syd Peng of West Virginia University in his latest book, Surface Subsidence Engineering, 1992, predictions based on the European experience are not necessarily predicitive of subsidence results in the United States. Only Dunrud deals with the Western United States, and his book is eight years

78-49 old. There has been a lot of country undermined since then. Surely there should be a better bibliography on Western subsidence than the one I see in this DEIS.

78-50 18. On page A-49 Section c. under "other mitigations", fences are discussed. Constuction is generally detailed as 3 wire fence with steel posts. Three wire fences between property owners are absolutely not suitable. This year in the life of the mine area two owners were pasturing separate groups of yearlings. A three wire fence would no more keep them separate than make me president of Meridian. Don Golder says that a yearling will crawl through a knothole in a fence post. A four wire fence will not stop wildlife movement; it will stop most cattle. The fences in the life of the mine area and adjacent are currently in quite good condition, due to the recent rebuilding after the fire of 1984. Those of us who paid for those fences with either sweat or money know just how expensive it is to build fence in the life of the mine area. The fence on the North line of Section 28, T 6 N, R 27 E took 84 man days to reconstruct plus 12 days of cat time, in addition to materials. The fence on the West line of Section 28, T 6 N, R 27 E took 112 man days to rebuild with no cat time, in addition to materials. We tried to get fencing contractors to come in and do the work. They took one look at the terrain and bailed out. We were fortunate that the Mennonite Church designated the fire area as one of their long term disaster projects and half the labor was donated, but that will not be the case in the future. Of course, some of those man days were rancher man days as opposed to general labor 8 hour 78-51 days. There has been no attempt anywhere to ascertain the miles of fences that will be impacted and projected repair and replacement costs. Some of the fences within the life of the mine area will be subsided in several different passes. Fences in and bordering the five year permit area were built Fred Johnson- tight and straight. Meridian will have a hard time meeting that standard.

78-52 19. A-48 Meridian had better do some consulting with the ranchers who will be actually using the proposed hydrologic structures--especially maintaining fencing exclosures. How long? Who maintains? Those can be livestock traps.

78-53 20. Page A-43--Guzzlers. A guzzler in an area of 14 inches of rainfall a year can by calculation catch less than 1/10th the gallonage of water produced by a spring averaging a 1 gpm production per year. See Don Golder's more detailed comments on guzzler efficiency from the public hearings.

78-54 21. Page A-43. Wells. Inside diameter of 4.5 to 5 inch on casing for a deep well, might tend to limit development options, such as size and type of pipe or pump used. It should be noted that the Western Area Power Authority is looking at possible options to enable it to begin pulling

78-54 electric lines to stockwater wells due to the high cost of poles and transformers necessary to step down power at those sites. They had a meeting in April 1992 in Billings with some REA's to investigate solar power in a hands on manner. We put in a solar well to a depth of 285 feet designed to pump 5 gpm for a total cost of $16,000. Rather than using storage batteries, we are using water pumped into a 10,000 gallon storage tank. The solar system was designed to be portable and can be used at another site. Fergus electric has complained that its growth curve is flat, but the rates for its customers have not been flat. If most of them are like myself, we are doing everything we can to cut unnecessary increases in those September bills.

78-55 We have windmills still operating on the same wells for 50 years. The galvanized stove pipe casings that were used had lives varying from 30 to 40 years. We have in most cases recased with 4 inch 10 PVC casing. We do not know how long it will last. Windmills need a stable base to maintain alignment vertically over the well hole. It might be some years before subsided areas would reach a sufficient degree of equalibrium. It doesn't take much to cause problems with a windmill. It also takes someone who understands their mechanics to keep them going.

22. Where does Meridian plan to construct temporary roads in the mine plan? Does DSL have to permit the location and construction? 78-56

23. How much more exploratory drilling does Meridian plan to undertake and where? See Page I-3. 78-57

24. If the maps in Figure I-3 are correct. the North Half of Section 8, T 6 N, R 27 E is BLM surface with very steep slopes, which in addition to subsidence, will experience slippage. According to USGS maps, the public could access it from Fattig Creek Road. How will Meridian deal with public recreation and subsidence? 78-58 Does Meridian currently own the grazing permit? 78-59

25. If Meridian cannot put their plans together as laid out, i. e., 3 million tons of coal sales in three years to build the rail spur, how long will Meridian be permitted to haul to Huntley? Once the load out is permitted at Huntley, can Meridian be stopped from hauling permit or no? 78-60

26. There is roughly 30 million tons of coal within the 5 year permit area. If Meridian only gets 1 million tons of coal sales a year, this 5 year permit should last for 30 years. Under this scenario, would the coal be hauled to Huntley for 30 years? 78-61

27. On the matter of trucking coal to Huntley, I understand that federal regulations governing the length of time that an over-the-road truck driver may drive at one time, do not govern hauls of less than 100 miles from the load site. Those drivers may drive virtually unlimited hours. They may be paid by the hour or by the ton-mile. A frequent scheduling under these circumstances is to run 12 to 14 hour shifts. Truckers paid by the hour are usually less likely to take dangerous chances than those paid by the ton-mile. Considering the problems with Highway 3'2, it would be very relevant to know how Meridian plans to contract for the haulage. 78-62

27. The Huntley loadout site is signed with a WesTrans sign, a Dennis Washington company. That same company is rumored to be in the process of ordering a fleet of coal trailers. Is there a deal here? Will WesTrans build the load out site? 78-63

28. Ventilator shaft construction has been known to drain intercepted water aquifers, when the aquifers are not sealed properly. Does DSL plan to have Meridian seal any intercepted waters during ventilator shaft construction? 78-64

29. What is the chemical comoosition of the heavy media bath used to clean coal? Is it toxic? How does Meridian plan to dispose of the spent solution? Will the material deposited in the Waste Dispoal area have been treated with the heavy media bath or is the heavy media bath for "clean coal" only? 78-65

20. Are water mitigation measures and reclamation techniques subject to revision in subsequent permits? 78-66

31. According to the DEIS, there are 100 elk in the Bull Mountains? The Fish and Game has issued 50 permits for elk hunting in the Bulls this fall. Isn't 50% an unreasonably high number of permits? Either there needs to be clarification on where the 100 elk are, or the figures need to be checked with Fish and Game. 78-67

32. It should be noted that displacing elk from the mine area onto other private owners impacts them, because the elk compete directly with other livestock for the same forage. Perhaps Meridian should pay pasturage to the other owners or compensation them for forced reduction in cowherd. 78-68

33. Page A-41. Horizontal drains do not work in all cases with springs. I expect the costs would be similar to drilling vertical wells, but slightly cheaper. Getting a drilling rig into some of the spring sites could require extensive road building. Will the increased permeability that is expected to be taken advantage of with this method of water devlopment also increase the amount of sedimentation that would inflitrate the two inch gathering pipe, tending to clog it? 78-69

34. Where has fracture repair been sucessful in restoring springs in longwalled areas? Fracture repair makes nice little diagrams in the permit, but I have doubts as to its feasibility. Between these repairs and the pond repairs, Meridian had better own a bentonite company, but they probably do. Getting runoff into a pond in the Bulls is a sometime thing any more. It strikes me that run off in the mined area will substantially decrease due to the increased permeability of the rock structures due to subsidence. About all that lined ponds would be good for would some spring water if it happened to come back. The same permeability problems would exist in trying to use natural channels to conduct spring water flow toward lower elevations. 78-70

35. In a number of places in the DEIS mention is made of areas being fenced to exclude livestock grazing, whether for water development or reclamation. Has an attempt been made to determine the number and configuration of the acres from which livestock will be excluded, and what affects it could have on the economic operation of a party trying to ranch in conjunction with the mine? 78-71

The DEIS does tend to forget that parties other than Meridian are deeply involved in the affects of this mine. In order to know how to live with it, it must be more clearly described.

36. The Bull Mountain Landowers contend that the minimum acceptable standard for water replacement in terms of quantity and quality is replacement, water source by water source, to existing premining quantity and quality of the source damaged, and the cost of operation of that wtaer source should be no more onerous than prior to mining. 78-72

37. What fuel will be used to dry the coal? Will the coal drying equipment need pollution control equipment? Will it be part of the same boiler system that will be used to heat the mine buildings? 78-73

38. Meridian has threatened individuals along the Broadview rail spur route with condemnation of the route by Burlington Northern. (Personal communication with George and Eleanor Carlson). What relationship does Meridian have with Burlington Northern Railroad? If condemnation is used for this rail spur will it become a publicly accessible line for shipments other than Meridian's? 78-74

38. The quality of the mine water in the old mines at Roundup is being used to justify predictions with the proposed mine. There are a couple of immediate differences that come to mind. Firstly, the old Roundup mines have not yet suffered the degree of subsidence that Bull Mtn. No. 1 will suffer. The water in the old mines is not totally filled with fragmented gob. Secondly, the overburden above the old mines has not suffered the degree of permeability increase that is endemic in most longwall mining. Finally, the water in the old mines has had a number of years to stabilize since mining ceased. Subsidence is not yet a major problem in the old Roundup mines. 78-75

39 Has Meridian conducted complete chemical testing on all springs in the water study area or only on those for which it has been doing monthly monitoring? 78-76

40. Does DSL plan to move the bonding requirements for the Huntley load out site from the Test Pit Permit to the Permanent Permit, and if so, will the amount of the bond be increased? 78-77

41. Table E-6 rates springs in relation to their value for ranch use. No person listed as a preparer of the DEIS has that kind of knowledge of ranching operations in the mine area. The people who would have that kind of expertise were not consulted. Certainly no Meridian personnel have that kind of expertise. I am attaching as exhibit "A" a list of questions asked me by Meridian personnel and answered verbally in about 5 minutes over the kitchen table. The answers were general at best. I find question 4 inquisitorial. The questionaire gives Meridian most of a rancher's financial information, but little information on how mining might impact a ranch operation. 78-78

The Meridian water monitoring personnel, were not even particularly accurate observers of the kind of water installations they were seeing. I find the following problems with their observations on springs with which I am personally familiar:

Spring 17145 (Bull Spring): This spring was excavated to blue shale water source with a scoria core, a culvert installed, truck load of washed river gravel place around the culvert and a permeable membrane placed over the gravel. A mechanical float in the bottom of the stock tank (metal, not wood) shuts off the flow into the tank and builds up the water storage in the gravel around the culvert until it reaches a certain level and over flows in the pipe 10 feet above the stock tank, where the flow exits from a water level discharge. On August 16, 1990, Meridian personnel noted no flow at this spring. It was not that the pring had ceased to flow; it was that Meridian personnel did not understand the construction of the spring and had never asked. 78-79

Spring 72125 developed with two tanks, one concrete bottomed with steel rim installed in 1965 and a second fiberglass tank installed in August 1983.

Spring 72115 has a bottomless old time steel tractor wheel set on the scoria, not a conventional steel tank. 78-80

I do not understand the monitoring plan. As it stands, the springs being monitored are those farthest away from the immediate impact of the mine such as Springs 17145 and 72'55 in our pasture. If the water modeling is correct the affects of mining should show up first on those waters closest to the mine perimeters.

Will the monitoring model shift under the permit to monitor those springs closest to the mining, and then move to those further out if impacts are detected? 78-81

42. The Permit Application has 4 electric wells listed in Appendix 312-2 for mitigation purposes. The DEIS lists 2 electric wells and 2 windmills for mitigation purposes. It seems the two documents are inconsistent. Please reconcile. 78-82

43. What will happen to mature pine trees on steep slopes under steep slope subsidence conditions? 78-83

44. Well No. 62720-03 is almost directly north a distance of two miles from our well in S. 5, T 5 N, R 27 E. See my verbal comments at the Billings hearing. 78-84

45. Have the increased levels of radon released due to subsidence in the area been calculated or considered? 78-85

46. Is there documented successful use of horizontal drains in longwall mined subsided ground replacing spring water in both quantity and quality? If so, where? Please cite studies. 78-86

47. For cost documentation, well service rigs for relatively shallow water wells cost $30.00 an hour plus materials. 78-87

48. If the State had to implement the proposed water mitigation plan, how much would it cost the State to do it? That should be the amount for the water bond, not the proposed bond in the permit application for $16,000. 78-88

49. Two alternatives that the State could have considered with respect to water would be to not mine the 4 sections where the Class I water springs are located or to backstow under those 4 sections to preserve the water. In Europe backstowing is used to preserve certain important features, certainly Class I water in arid Eastern Montana is such a feature. DSL should consider such conditions, but would DSL dare to impose them? 78-89

50. The degrading of Class I waters into Class II, and possibly Class III does change the hydrologic balance of the area. The degrading of Class II waters into Class III waters changes the hydrologic balance of the area. The more rapid infiltration of water into the mine pool area changes the hydrologic balance of the area. With the exception of the paragraph in which it is admitted that all waters might be lost, the overall tone of the DEIS is "Ever'thin's gonna be all right" from subsidence to water quality. The subsidence scenario in the DEIS is a mining company's dream. I think we need much better supporting documentation before it can be accepted. 78-90

51. Exhibit B attached hereto is a copy of the Coal and Exchange Agreement between the USA and Meridian Minerals. Condition 4 requires a permit for longwall mining from OSM and DSL in order to mine the NW NW Sec 18, T6N, R27E. Has Meridian applied for the appropriate permit and is their current mine plan in compliance? 78-91

Exhibit A

Ranching Operations Information

1.) Land Owner:
Address:
City: State: Zip:
Phone Number:

2.) Lands included within the ranching operations:

3.) Type of operations (cow/calf, young stock, etc.):

4.) Type and number of animals (agree with Inventory Tax Numbers or explain difference):

5.) Management Plans:
a. Pasture designations

b. Pasture rotation

c. Determination of forage

d. Water availability

e. Water utilization

f. Improved pasture techniques

Exhibit A

6.) Artificial or Flood Irrigation Practices:
Water source

Irrigate lands acreage

Frequency and season

Irrigation method

Type of crops

7.) Productivity Yields:
Historic and anticipated livestock weight gains

Historic and anticipated forage production

Historic flood irrigation attemps

8.) Management techniques for wildlife:

9.) Management techniques for recreation:

10.) Commercial timber management and harvest information:

Exhibit B

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL EXCHANGE AGREEMENT

THIS AGREEMENT ("Agreement"), made and entered into this 25th day of April, 1991, is in furtherance of an exchange as provided by Section 206 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. §1716) and implemented under 43 C.F.R. 2201.6 (1989), by and between the UNITED STATES OF AMERICA, hereinafter called the "United States", acting through the Department of the Interior, Bureau of Land Management, and MERIDIAN MINERALS COMPANY, a Montana corporation, having its principal place of business at Englewood, Colorado, hereinafter called "Meridian".

WITNESSETH, that for and in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, the receipt, adequacy and sufficiency of which are hereby confessed and acknowledged, and of the covenants and agreements herein contained, the parties hereto do covenant and agree to an exchange of interests in certain lands as follows:

1. Meridian shall convey to the United States, by general warranty deed, all of its right, title and interest to the following described lands situated in the Counties of Madison, Beaverhead, Deerlodge, and Carbon, State of Montana, to-wit:

County	Township	Range	Section	Description	Acres (Approx.)
Madison	8S	1W	15	All West of East Bank of Madison River	572.00
Madison	8S	1W	25	Part N1/2NE1/4 lying East of West Bank of Madison River	48.00
Madison	9S	1W	1	Lots 6,7, SW1/4NE1/4	77.45
Beaverhead	1N	13W	9	SW1/4,NW1/4NW1/4	200.00

Exhibit B-1

County	Township	Range	Section	Description	Acres (Approx.)
Beaverhead	1N	13W	17	Part lying SE of C/L of Big Hole River	608.00
Deerlodge	1N	13W	17	Part W1/2NW1/4 lying West of C/L of Big Hole River	32.00
Beaverhead	1N	13W	19	Part lying SE of C/L of Big Hole River	483.92
Deerlodge	1N	13W	19	Part lying NW of C/L of Big Hole River	145.56
Carbon	9S	21E	1	Lots 1,2,3,4	197.06
Carbon	9S	21E	3	Lots 2,3,4 S1/2N1/2,S1/2	600.63
Carbon	9S	21E	5	Lots 1,2,3,4, S1/2N1/2,N1/2S1/2, S1/2SE1/4	560.44
Carbon	9S	21E	7	Lots 1,2,3,4, E1/2,E1/2W1/2	624.08
Carbon	9S	21E	9	NE1/4,N1/2NW1/4, S1/2SW1/4	320.00
Carbon	9S	21E	11	All	640.00
Carbon	9S	21E	13	Lots 3,4	80.83
Carbon	9S	21E	15	N1/2,W1/2SW1/4, E1/2SE1/4,SW1/4SE1/4	520.00
Carbon	9S	21E	17	All	640.00
Carbon	9S	21E	19	Lots 1,2,3,4, E1/2,E1/2W1/2	625.16
Carbon	9S	21E	21	All	640.00
Carbon	9S	21E	23	All	640.00
Carbon	9S	21E	31	Lots 1,2,3,4	106.26

Exhibit B-2

County	Township	Range	Section	Description	Acres (Approx.)
Carbon	9S	21E	25	Lots 1,2,3	111.89
Carbon	9S	21E	27	All	640.00
Carbon	9S	21E	29	All	640.00
Carbon	9S	21E	33	Lots 1,2,3,4	112.80

The above-described lands (hereinafter called "lands") contain 9,873.18 acres, more or less.

The warranty deed conveyance from Meridian to the United States shall be sufficient to convey to and vest in the United States good and merchantable title to the lands, free and clear of all liens or encumbrances except as set forth in the deed. With respect to those portions of the lands situated in Madison, Beaverhead and Deerlodge Counties, Montana, in which Meridian Oil Company, a Delaware corporation, is the owner of the oil and gas estate therein, Meridian will acquire from Meridian Oil Company and transfer to the United States a waiver and release by Meridian Oil Company of its surface occupancy rights pertaining to its oil and gas estate in such lands.

2. The United States agrees to accept conveyance of the lands upon the terms herein expressed. Upon approval of the deed by the proper officials of the United States, the United States shall forthwith deliver to Meridian, as full compensation for the lands conveyed, a Patent to the coal estate in the following described lands situated in the Counties of Musselshell and Yellowstone, State of Montana, to-wit:

County	Township	Range	Section	Description	Acres (Approx.)
Musselshell	6N	27E	18	All (Frac.)	635.72
Musselshell	6N	27E	20	All	640.00
Musselshell	6N	27E	30	All (Frac.)	638.00
Yellowstone	5N	27E	4	Lots 1,2,3,4	159.44
Yellowstone	6N	27E	28	All	640.00
Yellowstone	6N	27E	32	N1/2,SE1/4	480.00
Yellowstone	6N	27E	34	N1/2,SW1/4	480.00

Exhibit B-3

The above-described lands (hereinafter called the "coal lands") contain 3,673.16 acres, more or less. The conveyance of the coal estate in the coal lands shall be full compensation to Meridian in exchange for the lands conveyed to the United States.

The Patent from the United States to Meridian shall be sufficient to convey to and vest in Meridian good and merchantable title to the entirety of the coal estate in the coal lands, free and clear of all liens or encumbrances, expressly including any coal leases, licenses, prospecting permits or similar rights issued or created by, through, or under the United States pertaining to the coal estate in the coal lands, except those certain federal oil and gas leases numbered M 58748 and M 73819 heretofore issued by the United States covering a portion of the coal lands located in Musselshell County, Montana. Such Patent shall expressly provide that as between the coal estate and the remainder of the mineral estate in the coal lands, including, but not limited to, the oil and gas estate therein, the said coal estate shall be the dominant estate in and with respect to such lands, and, accordingly, that the development and operating rights of the United States, its lessees, licensees, permitees, agents, successors and assigns, concerning that portion of the mineral estate retained by the United States shall at all times be fully subordinate to the development and operating rights of Meridian concerning the coal estate in the coal lands. In this regard, neither the United States nor its lessees, licensees, permitees, agents, successors or assigns shall have the right to undertake any development of or operations pertaining to the said retained mineral estate in the coal lands which would in any way be hazardous to coal production, would result in the waste of coal deposits, or would interfere with or otherwise burden (economically or operationally) the development and production of the coal estate in the coal lands.

3. Meridian shall not conduct surface mining operations on the coal lands. All other rights and incidents of ownership of the United States to use or enjoy the coal estate conveyed to Meridian, including, but not limited to, the right to conduct underground mining operations (except as limited in Article 4 below), shall transfer with the Patent delivered to Meridian hereunder. As used herein, the term "surface mining operations" shall mean operations directly related to the extraction of coal from the earth by removing the top soil or other surface materials over a coal seam before recovering the coal from the seam or bed of coal so exposed, but such term shall not include coal recovered during operations incidental to underground mining operations. The term "underground mining operations" shall include, but not be limited to: (a) surface operations incident to or in support of underground extraction and marketing of coal or in situ processing, such as construction, use, maintenance, and reclamation of: (i) roads, (ii) powerlines, (iii) shops, (iv) storage areas, (v) coal processing, sizing, washing, and drying areas, (vi) shipping areas, (vii) hoist and ventilation facilities and portals, (viii) other

Exhibit B-4

support facility areas, (ix) areas utilized for the disposal and storage of waste, and (x) areas on which materials incident to underground operations are placed; and (b) underground operations such as (i) construction, operation and reclamation of shafts, portals, escapeways, underground support facilities, and in situ processing, (ii) underground mining of coal by any method whatsoever, (iii) underground haulage, storage, blasting, and power distribution, and (iv) any other activities related to underground mining or support of underground mining of coal.

4. Meridian shall not conduct longwall mining under that portion of the coal lands located in Township 6 North, Range 27 East, Section 18, NW1/4NW1/4, as shown on the map on page 253 of the Bureau of Land Management's Final Environmental Impact Statement on the Bull Mountains Exchange(BLM-MT-91-001-4120), without first obtaining authorization to mine in such a manner in the form of a mining permit issued by the U.S. Office of Surface Mining Reclamation and Enforcement and the Montana Department of State Lands, or their successor(s), as appropriate.

5. The values of the interests and estates described in Articles 1 and 2 above have been established by the Bureau of Land Management's Northwest Regional Evaluation Team in their Bull Mountains Federal Coal Appraisal resulting in the determination that the value of the Article 1 interests and estates exceeds the value of the Article 2 estate and associated rights. Meridian agrees to make a donation of such excess in value to the United States, and the United States agrees to accept said donation, pursuant to 43 U.S.C. § 1715(a) and § 1737(c). The restriction on surface mining operations and the limitation on longwall mining provided for above have been agreed to by Meridian for the purpose of enhancing the public interest in this exchange, and the United States has given, and agrees to give, appropriate consideration to these factors in making its public interest determination.

6. Meridian agrees to furnish to the United States evidence of title to said lands which is reasonably acceptable to the Department of Justice, and also agrees to eliminate any and all liens or encumbrances which, consistent with the provisions of Article 1 above, render title to the said lands unmerchantable.

7. This Agreement shall be binding upon and inure to the benefit of the parties hereto, subject, however, to the conveyance of good and merchantable title to the said lands to the United States, to the valid patenting of the entirety of the coal estate in the coal lands to Meridian, and provided that no material loss or damage shall occur to either property prior to title conveyance.

8. This Agreement may be modified or amended only in writing signed by both parties.

Exhibit B-5

9. No member of or delegate to the Congress or Resident Commissioner shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom, but this restriction shall not be construed to extend to this Agreement if made with a corporation or company for its general benefit.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

MERIDIAN MINERALS COMPANY	UNITED STATES OF AMERICA
By:	By:
Sr. Vice President Title	A/S L+M DOI Title

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(79)

RECEIVED

OCT 06 1992

RECLAMATION DIVISION

Don Golder
P.O. Box 1705
Billings, MT 59103
October 5, 1992

Mike DaSilva
Environmental Specialist
MT Department of State Lands
Capitol Station
Helena, MT 59620
Re: Comments on the Bull Mountain Mine No. 1 DEIS

Since I was unable to present my comments in Roundup at the third hearing of the D.E.I.S. on the Bull Mountain Mine. #1. I thought there might be some in the area who had not thought it out this way. I am asking you to pass my comments on in Letters to the Editor.

I think Meridian failed to address the "load out site" in Roundup, with respect to the fact that economically as a permanent site for the thirty year life of the mine, it is the best they have. 79-1

In the "Draft Bull Mountain Mine, Number One Alternative Site Summary" dated January 31, 1992, the discussion of Roundup, the ninth site of eleven, has several inaccuracies or failures.

"The site area is located to the west of the intersection of Highways 12 and 87." Why not locate the site to the east of the intersection and before the next crossing over the old railroad Right-of Way?

Advantages:

"The site is located 16.8 miles from the mine." In fact, it is 14.3 miles from the mine if Meridian had a haul road down Rehder Coulee 4.3 miles from the mine, intersecting with US 87 ten miles south of the load out site at the intersection of Hwy 87 and 12. Calculated out, this would be an annual savings of $1.5 million, over the southeast haul to Huntley for the first three years of mine operation, at one unit train per week. 79-2

Disadvantages:

"There are no main line track, siding or load-out facilities." The savings of $4.5 million for the three year temporary haul, to Roundup rather than Huntley, would make a good down payment on load out facilities in Roundup.

"Although track previously existed along the Right-of Way, track and other facility will create some environmental impact." Not near as much environmental impact as 33 miles of new railroad from the mine mouth to Broadview. Thirty one miles of track will need to be laid to reach the site area. Thirty one miles of track plus facilities, projected at $6.750 million is far cheaper than the Bull Mountain Rail Spur at an estimate of $1 million per mile. " The trucking would be permanent over the life of the mine."

If the mine proved successful in the first three years or so, there could be a conveyor belt or high volume air tube put in place from the mine mouth to the rail head in Roundup. At the end of the life of the mine, this equipment could be dismantled and removed, leaving very little evidence of it's existence. the Bull Mountain Spur grade will be a permanent scar on the country side.

"There are 72 track miles to Laurel." When in fact, there are approximately 53 miles of track from mine mouth to Laurel. The difference in rail freight would be approximately 19 miles further to Roundup.

If you calculated the cost of the new railroad from Broadview to the mine mouth, approximately 33 miles against the cost of laying track on the existing Right-of-way, with load out facilities in Roundup, the Bull Mountain Mine Railroad Spur is by far more costly.

Capitol cost above Meridian's projected $6.750 million would be for a better storage and load out facility, consisting of a coal dust free silo capable of loading a unit train in three hours. Also, wouldn't it be reasonable to plan for an automated conveyance system, either by belt or high volume air, at such time as their market increased, justifying it over to trucking? 79-2

Meridian's approach to the start up of the mine leaves them with virtually no capitol mining related costs. This points to two possibilities; they are unsure of their market, and possibly do not have the financial backing to construct permanent facilities in Roundup.

Since Roundup supports the Bull Mountain mining venture, and the fact that a permanent coal loading facility in Roundup would keep more jobs in the community, would Musselshell county be willing to float industrial revenue bonds to encourage construction of permanent facilities in Roundup?

Another possibility would be for Meridian to borrow money for this construction from their prospective customers on the Pacific Rim. and pay them back through reduced coal royalties on the coal delivered to them. This would conceivably insure them of a market in that area.

Sincerely,

Don Golder

(80)

October 4, 1992

RECEIVED
OCT 06 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
Montana Department of State Lands
Capitol Station, Helena, MT 59620

Dear Mr. DaSilva:

Based on the public Huntley meeting held on September 22, 1992, I was informed that the Montana Department of State Lands (MDSL) took into account the social economic factors of various load out sites and came to the resolution that Huntley was the most beneficial in all aspects considered. I strongly disagree with this finding as in the draft environmental impact statement prepared by MDSL there are numerous contradictions and misnomers. The complete and utter disregard for the human well-being including the population of Huntley and all the citizens along the truck route was not taken into account at all. 80-1

I am addressing the factors which were completely disregarded by MDSL. I am triple licensed, CRC, LPC, CCDC, in Montana and am speaking on behalf of myself and the probable ramifications which will be accrued by all citizens due to the Meridian Minerals Co., MDSL, and the proposed load site in Huntley.

According to the Montana Environmental Policy Act under definitions (26.2.642) Sub Part II, pt B, #7 "'Cumulative impact' means the corrective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location or generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures." None of the human well-being was taken into account which includes the mental health, physical hazards of people's health, or the possible causal agent of chemical dependency. 80-2

First, the mental health aspect of the population of rural route 3 is 700 families; Huntley 260 rural routes and post office boxes 172. Pryor Creek Golf Course membership 700; Shepherd 600 rural route and 200 post office boxes; Worden 500 boxes and rural route; Ballantine 200 boxes and rural route; and Pompeys Pillar 100 = 3432 X 4 (parents and average 2 children per household) = 13,728 people X 70 years (average life expectency) = 960.
960 X $70.00 per hour for counseling X 52 weeks per year 960, 960 X $3640.00 = $3,497,894,400 which Montana Department of State Lands (MDSL) and Meridian Minerals Company will be liable for.

The mental health aspects which will be hindered will include, but are not limited to, include the diagnosis of Post Traumatic Stress Disorder, Dysthymia, Major and Minor Depression, Panic Disorders, Dream Anxiety Disorder, Sleep Terror Disorder, Sleeping Disorder, Insomnia Disorder, Anxiety Disorders, Organic Anxiety Syndrome, Delusional Disorder, Conduct Disorders, Avoidant Personality Disorder, Passive Aggressive Personality Disorder, Adjustment Disorder, Adjustment Disorder with Anxious and Depressed Mood, and Attention Span Disorders. All of these mental health aspects will be incurred due to worrying and stress created by the undue Huntley water usage and ground water pollution (Draft EIS page 18), the wild life hindrance (Draft EIS pages 20-24) not taken into account in the Huntley area of eagles nesting on the Yellowstone river; fox, deer, birds, fish, mountain lions, and pets. Also, the transportation (Draft EIS, pages 24-29) flow on Highway 312 states currently it has 10% heavy vehicle traffic and the incorporation of an additional 192 trips per 24 hours of heavy coal trucks with the severity of 1.78 accident which is over the average 1.53 severity - Needless to say, the accident rate will be extremely high and the accidents themselves will be severe. The traffic noise (Draft EIS, page 31) will be increased decibel and the constant traffic for 30 months will be damaging to ones mental health+physical health. No fire protection in Huntley (Draft EIS Page 37). The social well-being (Draft EIS, page 43), which includes the coal dust, noise, safety of children, highway deterioration, the intrusion of the Huntley community, recreation (Draft EIS, page 44) of the 6 acre park, which is 750 feet from the beet site, aesthetics (Draft EIS, page 48), the regional weather (Draft EIS, page 2), which was compared to Billings and weather differentiation between Billings and Huntley is like comparing apples and oranges. The stress of pollution and ecological damage to the population, Yellowstone River, irrigation, ranches, farms, and the real estate values will all be factors which hinder ones mental health.

The child abuse rate will increase due to the parents' stress level; fighting of families; divorce rate; employment loss due to no sleep because of noise level and retraining costs; alcohol and drug consumption due to stress and depression, nightmares; educational barriers; children's terror of being run over by coal trucks and/or their pets death; farmers mental state of having to drive to Billings to the beet site because of coal truck traffic, will be a major hindrance with the current site in Huntley. 80-3

Further, according to the Montana Environmental Policy Act under definitions (26.2.642) Sub Part II, Pt B, #12, "'Human environment' includes, but is not limited to, biological, physical, social, economic, cultural and aesthetic factors that inter-relate to form the environment. As the term applies to the agency's determination of whether an EIS is necessary, economic and social impacts do not, by themselves, require an EIS. However, whenever an EIS is prepared, economic and social impacts and their relationship to biological, physical, cultural and aesthetic impacts must be discussed."

In MDSL EIS the human factor of physical health and mental health was not taken into account at all. The medical costs is immeasurable. The three leading causes of death in the United States is: 1) heart, 2) cancer, 3) stroke. Certain cancer-causing agents, carcinogens, have been identified as causing lung cancer which is coal dust or better known as black lung disease. Occupational disease is caused by a specific organic substance to which the person has become sensitive, hypersensitivity pneumonitis.

The pulmonary disorders which will be incurred due to the coal site will include but are not limited to bronchial asthma which a causal agent is air pollution. Treatment and prognosis includes one's life time of oxygen, allergy medications and shots. Also, emphysema is a destruction of the walls of the lungs. There are two main types of emphysema disorders: Type A "pink puffers" and Type B "blue boaters." The functional disabilities include the earliest manifestations of COPD, cough and expectoration, and bed rest. The psycho-social disabilities is that "fear must be frequently allayed." 'Depression is also frequent and focuses on the loss of valued activities, the loss of a previously cherished image of vigor and health, and the conviction that there is an inexorable downhill course.'" Stolov and Clowers Handbook of Severe Disability page 312. The increase rate of depression is inevitable.

Treatment and prognosis is limited as damage to the lungs is irreversible. Often times, bed rest is prescribed which is detrimental to one's overall health. Bed rest affects humans' joints and connective tissues; muscles, due to limited use, which is referred to as atrophy; bones which, within 3 days, the rate of calcium removal begins to exceed the rate of deposition. The bones soften and become weak (osteoporosis). Urinary tract destruction; heart, which is a muscle, and "it undergoes disuse atrophy like other muscles when a patient remains inactive.' 'Being weaker, it can pump less blood per minute.'" Stolov and Clowers, Handbook of Severe Disability page 59. Circulation Lungs, Gastrointestinal Tract, Skin, and the mental state are all affected by bed rest. 80-3

Hearing Impairment and loss due to noise levels of machinery, trains, coal truck traffic, which will cause psychological damage, interfere with sleep, work and recreation, and create hypertension, strokes, increased admissions to mental hospitals, and increase in aggressive behavior. Noise affects health/welfare/quality of life.

The Psycho-social adjustment to chronic disease and disability are always extreme. "Disabled persons in our society assume a special kind of minority status and occupy a socially devalued role." Stolov and Clowers, Handbook of Severe Disability, page 14. The rate of increased traffic on Highway 312 will result in an increase in auto accidents which will, in turn, increase disabilities of the citizens of humans that travel on Highway 312. The medical costs will be extreme, the disability retraining costs will be extreme, and the mental state of these "unfortunate statistics" will be extreme!! 80-3

Referring to the Montana Environmental Policy Act under Definitions (26.2.642) Sub Part II, pt B, 14-18:

(14) 'Mitigation' means:

- (a) avoiding an impact by not taking a certain action or parts of an action;
- (b) minimizing impacts by limiting the degree or magnitude of an action and its implementation;
- (c) rectifying an impact by repairment, rehabilitating, or restoring the affected environment; or
- (d) reducing or eliminating an impact over time by preservation and maintenance operations during the life of an action or the time period thereafter than an impact continues.

(15) 'Programmatic Review' means an analysis (EIS or EA) of the impacts on the quality of the human environment of related actions, programs, or policies.

(16) 'Residual impact' means an impact that is not eliminated by mitigation.

(17) 'Scope' means the range of reasonable alternatives, mitigation, issues, and potential impacts to be considered in an environmental assessment or an environmental impact statement.

(18) 'Secondary impact' means a further impact to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action.

Beside the mental health and physical ramifications, there is also the increased rate of chemical dependency that must be taken into account, as when one is depressed due to stress or mental health anxiety or a physical disability, the likelihood of trying to divert one's sorrow by use of a mood altering drug is increased ten fold. Chemical Dependency (C.D.) requires treatment which can be residential or on an outpatient basis, dependent upon the degree of dependency and based on the C.D. evaluation. On the average, residential treatment for the 30 days is $1500.00, which must be followed by outpatient counseling which, on the average, takes 2 years at $70.00 per hour, per session. 80-3

According to the Montana Environmental Policy Act under the General Requirements of the Environmental Review (26.2.643) Section III, #1 a & b:

Section 75-1-201 requires state agencies to integrate use of the natural and social sciences and the environmental design arts in planning and in decision-making, and to prepare a detailed statement (an EIS) on each proposal for projects, programs, legislation, and other major actions of state government significantly affecting the quality of the human environment.

(1) The agency shall prepare an EIS as follows:

(a) whenever an EA indicates that an EIS is necessary or;

(b) whenever, based ont he criteria in Rule IV, the proposed affecting the quality of the human environment.

As everyone knows, child abuse is a reciprocal process, meaning

when one is abused the likelihood of them, in turn, abusing the next generation is increased. Also, the occurrence of chemical dependency, when raised in an alcoholic home, is increased and treatment and prognosis of either being chemically dependent in the next generation or being Adult Children of Alcoholic (ACOA) is likely. Statistics prove this is a factor. Will MDSL and Meridian be liable for the next generation too?

According to the Montana Environmental Policy Act, under Determining the Significance of Impacts (26.2.644) Sub Part IV, part I and 1 (a) and 1 (f):

(a) the severity, duration, geographic extent, and frequency of occurrence of the impact;

(f) any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions. 80-3

We believe that these should be legislative proposals.

All future actions should have been taken into account which was not done. All these factors have a Long Term Impact, persist beyond final bond release, on the population and, also, according to the Montana Environmental Policy Act under the Preparation and Contents of Draft Environmental Impact Statements (26.2.649) Sub Part IX, part 4b, 4c, 4d, 4e, 4f, these should have been taken into account.

(4) a description of the impacts on the quality of the human environment of the proposed action including:

(a) the factors listed in (3)(d) and (e) of Rule V, whenever appropriate:

(b) primary, secondary, and cumulative impacts;

(c) potential growth-inducing or growth-inhibiting impacts;

(d) irreversible and irretrievable commitments of environmental resources, including land, air, water and energy;

(e) economic and environmental benefits and costs of the proposed action; and

(f) the relationship between local short-term uses of man's environment and the effect on maintenance and enhancement of the long-term productivity of the environment. Where a cost-benefit analysis is prepared by the agency prior to the preparation of the draft EIS, it shall be incorporated by reference in or appended to the EIS.

Did MDSL and Meridian take into account the overall ramifications of the proposed coal dump in Huntley and the billions of which will be inevitable to the human life - I think not, or they would have placed the proposed loading site at a less populated town such as Cushman. According to the Montana environmental Policy Act under Preparation and Contents of Draft Environmental Impact Statements (26.2.649) Sub part IX, #5, #8, an analysis of reasonable alternatives to the proposed action, and an explanation of the trade offs among the reasonable alternatives. Logistically, a coal site in Cushman would be better as all of the Meridian Mine would stay in Musselshell County. Also, being less populated is financially more sound for Meridian as cost for health ramifications would be extremely less. Traffic accidents would be fewer as the road is not used as much by commuters. Not taken into account was the traffic and tourism on Highway 312 to the National Landmark of Pompey's Pillar Rock of Lewis and Clark Expedition, which is posted at the beginning of Highway 312 east bound to Huntley. This would not be a factor if the coal site was placed in Cushman. Also, the tourism and traffic to Homesteader's Days and the Huntley Park was not taken into account. All of these people would also be affected by a coal site being in Huntley and MDSL and Meridian would be liable for their well-being and lives. These people would not be an economical consideration to you either if the coal site was in Cushman. The created jobs would still be alive in Cushman. 80-3

According to the Meridian's, Robert B. Morehead, Jr., Project Manager, April 8, 1991, letter to Mr. Clint Erb, Environmental Program Manager, observations were weighed and the most cost effective load out was Huntley, least expensive for Meridian (see enclosed). All Meridian took into account was the initial starting fee, not the long term effect to human life. I do not have any idea what a human life is worth - do you?

How could MDSL come to the conclusion that Huntley was the most beneficial and cost effective option? MDSL took into account social-economic factors to come to that resolution. I believe, without a doubt, that MDSL did not consider all of the factors and draft EIS is completely unacceptable! 80-3

Sincerely,

Ella Dugan-Laemmle

Ella Dugan-Laemmle, MS, CRC, CCDC, LPC
P.O. Box 67
Huntley, MT 59037
(406) 348-3802

Page 4 of 4

LOADOUT

	ROUNDUP	LAVINA	CUSHMAN	BELMONT	BROADVIEW	COMMANCHE	ACTON	BILLINGS	MOSSMAIN	HUNTLEY (Shepherd Road)	HUNTLEY (Highway 312)	COORS (Shepherd Road)	COORS (Highway 312)
TOTAL ESTIMATED CAPITAL													
Track	6,500,000	3,173,000	435,000	1,000,000	170,000	870,800	740,000	200,000	200,000	0	0	740,000	740,000
Equipment	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Highway	-	-	300,000	500,000	1,500,000	1,260,000	640,000	80,000	80,000	210,000	80,000	210,000	80,000
Stockpile	50,000	50,000	50,000	50,000	20,000	50,000	50,000	20,000	20,000	15,000	15,000	20,000	20,000
Generator	50,000	50,000	50,000	50,000	20,000	50,000	50,000	20,000	20,000	15,000	15,000	20,000	20,000
Capital Summary	6,7-0,000	3,423,000	985,000	1,750,000	1,860,000	2,205,000	1,487,500	400,000	330,000	265,000	135,000	1,020,000	890,000

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(81)

October 3, 1992

RECEIVED
OCT 07 1992
STATE LANDS

Mike DaSilva
Environmental Specialist
Mt. Dept. of State Lands
Capitol Station
Helena, MT 59620

Re: DEIS - Bull Mountains Mine No. 1

Dear Sir:

I oppose Meridan Minerals request for a permit to mine coal as outlined in the draft environmental impact statement, August 1992 for the following reasons:

I live northwest of the proposed mine in the West Parrot Creek drainage. I consider this property to be " around the life-of-the mine area". Therefore, I have major concerns regarding Meridian's hydrologic mitigation measures (Chapter 4 page 17-20, Appendix A page 38-48). Namely, will they work?! Should Meridian's mitigation fail, there will be irreversible and irretrievable loss of some springs and intermittent stream reaches (Chapter 4, page 85). There should be a realistic bond and a permanent trust fund to monitor and restore water resources likely to be disrupted by mine subsidence both on-site and within 10 miles of the mine. I would like Meridian to pay for initial baseline groundwater data for my house/livestock well. 81-1

I work in Billings and know Highway 87 between Roundup and Billings well. Adding 192 additional trucks, 24 hours a day, for hauling coal to Huntley for the next 3 years is insane! The DEIS points out many deficiencies in this proposal. I hope that the public's best interest is considered ahead of Meridian's with a disapproval of interim coal hauling to Huntley. 81-2

The soils in the proposed mine area are highly erodible. There should be a realistic bond and a permanent trust fund to stabilize slopes and control subsidence-caused erosion.

Formal notice should be given to interested parties on development and revisions of permit requirements.

Sincerely,

Elizabeth Woodson

Elizabeth Woodson
Box 424
Roundup, MT 59072

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(82)

CENTRAL MONTANA
RESOURCE CONSERVATION & DEVELOPMENT AREA

RECEIVED
OCT 07 1992
STATE LANDS

Mr. Mike DaSilva
Environmental Specialist
MT. Dept. of State Lands
Capitol Station
Helena, Montana 59620

September 30, 1992

Dear Mr. DaSilva

The Central Montana Resource Conservation and Development Area (RC&D) was happy to receive our copy of the DEIS for the Bull Mountains Mine No. 1, from the MT. Dept. of State Lands. It appears to have gone to great lengths to summarize all the issues related to the mining proposal. From the beginning of the EIS process, we have recognized the necessity to review all scoping, application and related documentation for this proposal. We have participated in all the public meetings and reviewed all information and publicity we could acquire, relating to this project.

It is our belief that the DEIS is a comprehensive outline of the proposal, a review of the issues and concerns raised throughout the EIS process and a projection of the anticipated impacts that may result if the project is permitted to proceed. It also articulates the conclusions about the levels of impacts and changes possible, derived through study and analysis of all the related documentation of baseline data and public processes associated with the project proposal.

Based upon the conclusions of the DEIS and all other related information about the proposed project, we see no reason why the decision to approve the applicant's proposal should be anything more than a formality.

Thank you for the opportunity to offer these comments about the Bull Mountains Mine No. 1 DEIS.

Respectfully Submitted,

Monty L. Sealey, Exec. Dir.

34 THIRD AVENUE WEST • P.O. BOX 666 • ROUNDUP, MONTANA 59072 • PH 406-323-2755

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(83)

RECEIVED
OCT 08 1992
STATE LANDS

October 5, 1992

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

Dear Mike:

Enclosed please find (1) my writtan comments concerning the Draft EIS for Meridian Minerals Company Bull Mountains Mine No. 1, and (2) written script from my oral testimony et the Public Hearing in Huntley on September 22, 1992.

Please feel free to contact me enytime at work or home if you have any questions or comments concerning these.

Thank you for your time end efforts spent with us.

Sincerely,

Jackie Stearns

Jackie Stearns
P.O. Box 84
Huntley, MT 59037

cc: Dennis Casey, Commissioner
Department of State Lands

October 5, 1992

Mike DaSilva
Environmental Specialist
MT Dept. of State Lands
Capitol Station
Helena, MT 59620

RE: Draft Environmental Impact Statement
for Meridian Minerals Company
Bull Mountains Mine No. 1

Dear Mr. DaSilva:

I am writing in response to the DEIS mentioned above which was issued by the DSL on August 31, 1992. This document is lacking on many accounts and in its present form does not provide a solid tool for officials to use in basing decisions regarding this project.

Much of the DEIS document dealt with irrelevant analysis of impacts under Alternative Two, which denies approval of the project. Tables comparing the two alternatives show almost consistently "Negligible Impacts" on all points under Alternative Two. The Agency, by exercising the option of "no action" as an alternative, was able to avoid having to provide alternate approaches which could accomplish the same results and objectives as the proposed action but with less adverse environmental impacts. Numerous issues were not specifically addressed, inadequate and generalized data was used, and MEPA Rules were not adhered to by the Agency. 83- 1

The following is a brief list of those issues and impacts not addressed in the DEIS:

1. Alternative load-out sites were minimized and considered unimportant by the Agency. Only a brief discussion was given, lacking a level of detail needed because of their significance; 83- 2
2. For impacts determined by the Agency as moderate with potential to be significant, and major to significant, the Agency failed to provide discussion for mitigation, stipulations, or other controls with which to give compensation for said impacts; 83- 3
3. Secondary and residual mental health effects to the human environment in the Huntley area due to the impacts of the proposed load-out operations were not considered; 83- 4
4. Residual medical health effects to the human environment in the Huntley area due to the impacts of the proposed load-out operations were not considered; 83- 5

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5. The cumulative impacts of traffic patterns involving peak travel hours, business accesses, number of approaches, and intersections along the truck haul route were not addressed or analyzed; 83- 6
6. Commuter traffic along Northern Avenue in Huntley to I-90 past the proposed Huntley load-out site was not addressed as a factor in considering impacts at the load-out site; 83- 7
7. Fire protection for the operations at the proposed Huntley load-out site is inadequate; 83- 8
8. The results of a telephone survey conducted in our area in 1991 were not included; 83- 9
9. Residual impacts to property values for the property owners in and around the Huntley area and along the truck haul route were ignored; 83-10
10. Records of data, sources used, and well locations used for monitoring were not provided in the DEIS in regard to the proposed Huntley load-out site; 83-11
11. Location and data records used for air quality monitoring for baseline data was not given; and 83-12
12. The Huntley community was not included in the original scoping activities of the DSL. 83-13

The following will discuss the above points in detail:

1. Alternative Load-out Sites.

The details of the Agency's evaluation and sources of data should have been included in the DEIS for public review and comment.

Under the MEPA Rule 26.2.643, "General Requirements of the Environmental Review Process," Section III, Part (2), Subpart (b), it states that, for each proposal for projects, the Agency shall apply the following criteria: "...to assist in the evaluation of reasonable alternatives and the development of conditions, stipulations, or modifications of a proposed action..." and MEPA Rule 26.2.648, "Environmental Impact Statements - General Requirements," Section VII, Part (2), states that "The agency shall discuss the impacts of a proposed action in a level of detail that is proportionate to their significance." 83-14

The DSL fails to follow these rules by giving only a brief description of alternative load-out sites in Chapter II, Page 4 of the DEIS.

Also, the Agency failed to follow the MEPA Rule 26.2.629, "Preparation and Contents of Draft Environmental Impact Statements," Section IX, Part (8), which states that the Agency shall prepare a DEIS containing the following: "...an explanation of the tradeoffs among the reasonable alternatives..." 83-14

2. Compensation for Moderate to Major and Significant Impacts.

In the DEIS Chapter IV, Page 36, stating "The Agency concludes that the impact to traffic flow and public safety along public highways from mining-related traffic would be moderate with the potential to become significant during the 2 to 3 years the Huntley loadout is in operation."

DEIS Chapter IV, Page 38 states that "...impacts to the integrity/stability of County and State roads from trucking coal from the mine to the Huntley loadout would be major and significant over the short term..."

And in the DEIS, Chapter IV, Pages 41-42, it states, "Noise generated during the operation of the loadout... occasionally would be above acceptable levels recommended by the EPA."

Also, in the DEIS, Chapter IV, Page 50, it states "...impacts to social well-being in the Huntley area would be moderate with the potential to become significant over the short term..." 83-15

Last in the DEIS, Chapter IV, Page 60, which states, "...impacts to visual resources/aesthetics in Huntley from Huntley loadout would be major and significant..."

The only compensation suggested by the Agency for any of the above impacts was found in the DEIS Chapter IV, Page 50, which states "Closure of the Huntley loadout facility would be a positive impact on the social well-being of Huntley residents who opposed the project."

MEPA Rule 26.2.649, "Preparation and Contents of Draft Environmental Impact Statements," Section IX, Part (6) states that the agency shall prepare a draft environmental impact statement containing the following "a discussion of mitigation, stipulations, or other controls committed to and enforceable by the agency or other government agency..." and Part (7) "a discussion of any compensation related to impacts stemming from the proposed action..."

Under MEPA Rule 26.2.642, "Definitions," Section II, Part (6), "Compensation' means the replacement or provision of substitute resources or environments to offset an impact on the quality of the human environment." 83-15

3. Secondary and Residual Mental Health Effects.
and
4. Residual Medical Health Effects on the Human Environment.

Neither of the above impacts were considered in the DEIS.

MEPA Rule 26.2.642, "Definitions," Section II, Part (12) states "Human environment' includes, but is not limited to biological, physical, social, economic, cultural, and aesthetic factors that interrelate to form the environment...whenever an EIS is prepared, economic and social impacts and their relationship to biological, physical, cultural and aesthetic impacts must be discussed." 83-16

Also under the MEPA Rule 26.2.642, "Definitions," Section II, Part (16) "Residual impact' means an impact that is not eliminated by mitigation..." and Part (18) "Secondary impact' means a further impact to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action."

And, as per MEPA Rule 26.2.649, "Preparation and Contents of Draft Environmental Impact Statements," Section IX, the Agency shall prepare a DEIS that contains the following: Part (4), Subpart (b) "primary, secondary, and cumulative impacts; (c) potential growth-inducing or growth-inhibiting impacts...(e) economic and environmental benefits and costs of the proposed action; and (f) the relationship between local short-term use of man's environment and the effect on maintenance and enhancement of the long-term productivity of the environment..."

5. Cumulative Impacts of Traffic Patterns.

The Agency did not address this issue as defined under MEPA Rule 26.2.642, "Definitions," Section II, Part (7), which states "Cumulative impact' means the collective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location or generic type. Related future actions must also be 83-17 considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures." 83-17

6. **Commuter Traffic Along Northern Avenue in Huntley.** 83-18

The DEIS document did not include any discussion and analysis of this secondary impact.

7. **Inadequate Fire Protection at the Proposed Huntley Loadout Site.**

The only reference to this is found in the DEIS Chapter III, Page 38 which states that "The Huntley Fire Department has 4 to 5 volunteers - not enough to provide sufficient fire protection to the community...In addition, the fire department is not properly equipped to provide year-round fire protection..." 83-19

Again, no compensation or control measures are discussed or suggested by the Agency in the DEIS.

8. **Results of Telephone Survey.**

The Agency failed to include the results and statistics from the survey conducted in the Huntley area in 1991. This would be vital information needed by our decision-makers in forming their decisions on this project. 83-20

9. **Residual Impacts to Property Values in the Huntley Area.**

The anxiety caused by having a coal loadout facility in Huntley and having a person's property value lessen to the point where equity could not be realized would have a major mental health effect on the property owners in the Huntley area. 83-21 Not only would values fall when the loadout facility is operating, but population growth and re-sale value of property would diminish for several years after the loadout closed, due to the perception by the general public that the loadout was located in Huntley at one time. 83-22

10. **Well Monitoring at the Proposed Huntley Loadout.**

Even though the Agency states in the DEIS Chapter IV, Page 24 that "...impacts to alluvial ground water 83-23

supplies in the Huntley area from the water supply well at the loadout would be negligible..." the information used to support this statement was generalized and did not identify the source of well data collection and the locations of the monitors. The DEIS document Chapter IV, Page 24 also states "...the proposed pumping rate of about 20 gpm would create minimal drawdown as close as 1,000 feet from the well..." and in the DEIS Table A, Page 13 "An existing, 20-foot well...would be used to furnish up to 30,000 gal/d of raw water..."

Under MEPA Rule 26.2.644, "Determining the Significance of Impacts," Section IV, Part (1), Subpart (b), it instructs the Agency to consider the following criteria: "...reasonable assurance in keeping with the potential severity of an impact that the impact will not occur..." 83-23

Was monitoring of wells done within 1,000 feet? Which wells were used? Was monitoring done by the Agency or by Meridian Minerals Company?

The information requested above is needed in order to determine if, in fact, the impacts will be negligible.

11. **Air Quality Monitoring.**

The Agency provides models for the predicted ambient concentrations of air pollutants, but what did the Agency use as baseline data for existing air quality? No information was provided in the DEIS which shows where or when the baseline monitoring was done or what the actual data was. This is an important factor in determining the predicted concentrations of air pollutants and must be addressed and analyzed by the Agency. 83-24

12. **Exclusion of Huntley During Original Scoping Activities.**

The DEIS states in Chapter V, Page 2 that "The Agency held two public meetings to obtain public input to the scoping process. Twenty people attended the first public meeting in Billings, Montana on June 11, 1990. Seventy-seven attended the second meeting, in Roundup, Montana on June 12, 1990." 83-25

The Agency failed to hold a public meeting in Huntley at that time, the community which stands to lose the most in quality of life. The Agency did not follow MEPA

Rule 26.2.647, "Determining the Scope of an EIS," Section VII, Part (2), Subpart (a) which instructs the Agency to "invite the participation of affected...and interested persons or groups..." and MEPA Rule 26.2.643 "General Requirements of the Environmental Review Process," Section III, Part (2), Subpart (d) "to ensure the fullest appropriate opportunity for public review and comment on proposed actions..." 83-25

In closing, I am urging the Department of State Lands and all the decision-makers involved with the Meridian Mine Project to choose an alternate site for the temporary coal loadout facility, or, at the very least, to instate proper mitigations, stipulations, and other controls to ensure the public's safety and quality of life for all the citizens affected by the Project.

Sincerely,

Jackie Stearns

Jackie Stearns
P.O. Box 84
Huntley, MT 59037

cc: Dennis Casey, Commissioner
Department of State Lands

84

DISAPPROVAL FOR

MONTANA 5-YEAR PERMIT TO MINE COAL FOR MERIDIAN MINES AND ASSOCIATED FACILITIES.

THE MONTANA LAND USE AGREEMENT FOR THE OPERATION OF THE BULL MOUNTAIN MINE NO 1 AND ASSOCIATED SUPPORT FACILITIES.

A DISAPPROVAL OF SUCCESSIVE AMENDMENTS OF THE MONTANA PERMIT TO MINE COAL.

A MONTANA COAL LEASE

A FEDERAL PERMIT TO MINE COAL

AND A FEDERAL SURFACE USE PERMIT FOR FUTURE LIFE-OF-MINE DEVELOPMENT.

SIGNATURES	ADDRESS
	1576 [illegible] Ave. Huntley, MT 59037

ORAL TESTIMONY
Huntley, Montana
9/22/92

Gary Amestoy, Administrator Reclamation Division of Department of State Lands, opened the meeting at 7:30 p.m. He explained the purpose of and procedure for the meeting, and the regulatory authority for preparing the EIS.

John Scott: I'm John Scott, Rep. from House District 97 which represents this area. I have a request of the Department of State Lands. Verbatim testimony is presented in Letter 4.

Monica Lundeen: I'm a member of the Huntley Community Club and also a resident here in Huntley. Verbatim testimony is presented in Letter 13.

Jackie Stearns: I'm honored to be here today on behalf of the people of Huntley and on behalf of my family and myself. My name is Jackie Stearns and I would like to share our concerns with you today. During the summer of 1990, when Meridian was at the height of their test pit run, the quiet, unhurried, unpolluted way of life in our community was shattered. A thick, black, filthy dust caked our houses and our lungs. Several neighbors, young and old, with respiratory problems suffered from the dust. The noise from the constant truck traffic, the loaders moving the coal on the stockpile, the train cars clanging back and forth, caused many sleepless nights. The air was stifling and we dared not open windows because, wind or no wind, the coal dust H- 1 drifted in and settled on everything. This went on for nearly six months. When these things happened, I did have a personal interest in it. My motivation was my family's health and my health which was severely threatened. But the more I spoke to the people in the community, neighbors and friends, and even those who didn't live close by, I found that there were many of us with the same concerns. Since then my scope of understanding broadened to include much more than just myself and my family. It includes hundreds, maybe thousands, of people in my community and the surrounding areas. We discovered that not only was there dust and noise problems, but also these concerns.

What was the danger of contamination of our water supplies because the pad that was used for the stockpile was not lined to prevent seepage of particulates into the ground water supply? H- 2

What about safety on the haul route? What would the added traffic do in regard to bus routes for school children and for drivers on the narrow, pot-holed road? H- 3

What about the farmers who drive their machinery along the road? H- 4

What would be the increase of accidents? With the added stress to this old highway, H- 5 what would be the deterioration rate and who is responsible for maintaining and repairing it? H- 6

These questions and many others came from people in our community. We have taken our direction from them and feel that we accurately represent them. We were chosen to be spokespersons and therefore be assured what you are hearing today voices the concerns of many, many people.

If we have been perceived as unresponsive to Meridian's invitations to talk one-on-one, it is due to the repeated advice of several persons who deal with these kinds of conflicts all the time. They say that a direct contact between citizens and big business is not always the best way to approach a problem. Thus far, we have been encouraged to use our State, County, and local people as mediators and to follow the correct procedure for the EIS studies.

One of the jobs of DSL is to judge objectively and as a third party, act as mediator between groups of concerned citizens and big business. If we have perceived Meridian as calloused, and unresponsive to us and blatantly ignoring the State Agency's request, maybe it is because of some of our past experiences. For example, the Montana Department of Highways, letter dated May 8, 1991, to Department of State Lands, instructs Meridian to identify how they are prepared to reduce conflicts with school buses. Meridian repled: "all trucks would be equipped with a school bus schedule and all of the bus routes would be posted for the drivers." They say nothing of what their drivers will do about it, or if any procedures will be enforced. In this same letter, Montana Department of Highways instructs Meridian to tarp or cover the loads and their reply was: "the washed coal will be partially blocked with air foil wind screens to prevent blowing of the small coal." Their Statements reek of total disregard for the agencies' instructions.

We have been guaranteed many times that Meridian's plans for a loadout facility will be State-of-the-art equipment and handling and they have taken care of the dust problem. Their studies showed that 90 percent of the dust generated during the test pit run was caused from truck traffic, but the major portion of the dust was generated by the stockpile itself and the way it was handled. Meridian's solution to this dust problems consists of using water spray. Since they anticipate operating 340 days of the year, how can water sprays control any dust when the temperature falls well below zero here during many months? H- 7

Not only that, but if there are four times the amount of coal loaded out over the amount we experienced before, there will be a dust problem, no matter what kind of equipment is used and how careful the machine operators are, unless that stockpile is completely enclosed. H- 8

Keep in mind also, that if a loadout is constructed and if air quality standards are ever violated during the course of operations, it would still take a minimum of 48 hours to shut the operation down. In the meantime, Huntley residents would eat dust and suffer for two days. H- 9

The number of months that Meridian claims it needs to run a loadout in order to complete a rail spur has steadily grown from 18 to 20 to 22 months. Thirty months was the time frame instantly adopted when they heard a statement made at a public meeting in July of last year, and now throughout the EIS, it lists 2-3 years. Three years to me is 36 months. H-10

It is our understanding that most mining operations have a rail spur in place before turning over any rock. Is Meridian so unsure of their market or their lack of signed contracts that they are unwilling to forego a truck-hauled loadout? It is possible that they are anticipating using the loadout for much longer than 36 months. H-11

We don't claim to know all the facts in this situation but we do feel we have valid concerns and they need to be heard.

Consider for a moment the impact this may have on our Heights merchants. If Highway 312 is so congested and unsafe to use, wouldn't many people drive on the Interstate instead and bypass the Heights altogether. This may create more business for the west end but the Heights could experience ruin to many businesses. H-12

We are not here to shut down the operations of the mine or a loadout facility. But we do want to be assured that Meridian will do what they are required to do. And if Meridian is a company oriented toward the safety and welfare of people, as well as toward being a profitable business, they could go the extra mile in this project. If nothing else, couldn't they change their preferred site from Huntley to Acton or Broadview, a host of any other sites which they H-13 themselves have said are a feasible established site? If the people of Huntley have a choice, our town would not be the preferred site of a loadout.

We are not here to take anyone's job away from them. We're not against the mine operation and we're not against the loadout, as long as it is done right. The same number of jobs will still be there, no matter where the loadout facility is located. It will still be in Yellowstone County, and this County will still receive all the benefits of the number of jobs, income, tax dollars, etc., which has been projected for our County.

In the summer of 1990 we experienced a horrible situation. This was on a minute scale compared to what is being proposed for the mine operation. For example, Meridian loaded 125,000 tons of coal through Huntley. According to statements made by Bob Morehead the Project Manager, that was moving 800 tons per hour and loading 110 train cars every 16 hours. During the mining operation, they anticipate being able to haul up to 4,400 tons of coal per day, and have stockpiling ability of up to 30,000 tons. That means a pile of fuel the size of four football fields less than 1,000 feet from many houses in Huntley. Hauling up to 4,400 tons per day, 340 days per year, 24 hours per day, means one coal truck every 8 minutes running down Highway 312 and past hundreds of residents. It means round-the-clock noise from trucks, loaders, dozers, and trains. It means dust and more pollution from the diesel fumes. It means three more trains per week running through a major road in Huntley. It means more traffic accidents and possible deaths of people. H-14

We have been asked if we would be willing to compromise if a loadout comes to Huntley. If it did, what choice would we have but to compromise? At this point, we can not compromise any more than we already have. We compromised when the temporary loadout was here, we compromised our health, our families' health, our safety and well- being and ever since we've compromised of our time spent with our families because much time is spent writing letters, talking with people, trying to do what is right. I know that none of us on this committee would be willing to sacrifice this much of time and hard work on something like this if we were not committed to standing by our principles. These are basic principles folks, the right to choose where we live, and provide a quality environment to raise our families in, the right to live our lives as we see fit as long as it does not interfere with another's rights. When a person experiences his or her rights being violated in such a manner, it is time to speak up, to step in, to stand your ground until that situation is corrected. Thank you.

Steven Erb: My name is Steve Erb. I'm representing myself, my family, my wife and my children and my community. I'm currently serving as President of the Huntley Community Club and as Chairman of the Standing Committee which was formed to address the concerns of the Huntley community and the surrounding area regarding the proposed Huntley loadout. Verbatim testimony is presented In Letter 18.

Nicol Price: I'm Nicole Price and a member of the Huntley Community and a member of the Huntley Community Club and also coordinator for Medicine Wheel Alliance. Verbatim testimony is presented in Letter 6.

Roger McGraw: I only have a couple of things I wanted to bring up. I live in Shepherd. I know the concern on the traffic in Huntley and the problems there have been in the past, but Meridian, I know, is going to take care of the dust control and the traffic control. Like Monica said, there can be some speed limit signs put up.

The other thing is that I don't know if everybody is looking at the wages and money that this is going to generate and the unemployment that this will take care of. This is going to take care of about 300 unemployed people at a rate of about $33,000 per year, per person. That is a lot of dollars, and that is needed. True, it probably involves mostly Roundup, nearly 50 percent, but there are other people getting involved with this. The work is there. I think we ought to really think about this before we turn anything down. We need to take a good hard look at it. It's only going to be two-year program, from my understanding, in Huntley. Like it says, it is a good program.

Shirley Culbertson: I'm from Shepherd also. I did not read the document. I am speaking for some of the people of Shepherd that are very concerned about the traffic. It is really bad now. I work in Billings and going back and forth is bad enough now. My mother lives here in Huntley, and when they were doing the test run, I came down to see her and it was real dusty with coal. She told me, "I don't think I can take this much longer." She is 89 years old. Thank you.

Ellen Pfister: I'm Ellen Pfister, I ranch on the southern edge of the mine plan. I also get my mail in Billings so of necessity I use either U.S. 87 or Highway 312 to go to town for business and pleasure. Tonight I would like to talk about the public subsidy of this mine for public transportation during the first three years of mine life, and once again raise the questions of public safety on some of these roads.

On the Fattig Creek Road on the north end, which is the first mile and a half where Meridian will hit the public roads, currently PM Mine has its own mine that uses Fattig Creek Road for just a very short distance. It was unclear to me from reading the DEIS, exactly why Meridian felt H-15 it should use the public road for a mile and half as opposed to the current private road out of PM Mine when both are gravel roads. The gravel that is used on those roads over there will quickly break up under coal truck pressure.

Then the next road that will subsidize the mine is the Old Divide Road from the intersection of Fattig Creek Road down to U.S. 87 for a distance of approximately five miles. Under the test pit hauling, it broke up within the first week. There is nothing in the DEIS that indicates - I guess Musselshell County will have to pay to repave that one to support the coal H-16 trucks.

U.S. 87 has a new subdivision going in, Cedar Ridge North, beginning at mile marker 25 and extending south along U.S. 87 for about three miles, in some cases on both sides of the road. The lots are currently being peddled at $450/acre, they are some of the 20+ acre lots. H-17 There will be about six sections subdivided in that subdivision. It would be a great place for miners to live who work at the mine. That subdivision is also in the Shepherd school district which, if there are children who move into it, could increase the number of school buses up U.S. H-18 87 or at least certainly the distance.

There is also another subdivision being planned. In Section 35, township 5 north, range 27 east, which would exist from the east on County Line Road to U.S. 87 at mile marker 25.

Something I have wondered about is what would it cost to build a raised cross-walk over

U.S. 87 where the school cross walk crosses to Independent School. That strikes me as a very hazardous area. The condition on 312 have been amply addressed here tonight. I discovered last year that 312 is what is called an "orphan highway", that no agency will claim it. To rebuild it will cost somewhere in the vicinity of several million dollars. And I can tell you that, after having driven over 3000 round trips from our ranch to town and back in the last 20 years, 312 is a very dangerous highway when you are broken down, especially at rush hour. There are no shoulders on the road, there is no place to get your car out of the traffic. It is really pretty terrifying, as a matter of fact. H-19

The people at the State Highway Department may have counted the vehicles on 312, but I don't think they observed the traffic patterns. The traffic in the last 3 years seems to have increased substantially and I have had a number of near misses on that road, particularly with people turning left into businesses. H-20

I have attached to my testimony a list of various businesses and particularly dangerous intersections between the Yellowstone River Bridge and the intersection of U.S. 87. I total about 40 of them, which is an average of four per mile. Most of these are commercial businesses with turns on them. The drivership on 312 has a lot of very young people and a lot of older people and to throw the coal trucks in this is a very dangerous proposition.

On all of these roads, with the exception of 87 as it is being rebuilt, the public is going to subsidize at some point. If the users of 312 can get help from no one else, I would suggest going to the Legislature to seek authorization for a toll road or some form of redistribution of the Diesel Fuel Tax to at least help pay for repairs. Otherwise the public, somewhere, somehow, is going to subsidize Meridian's use of 312. I hope no one pays with his life, for then it will become a very expensive subsidy indeed. H-21

One final question–if Meridian fails to sell sufficient coal to support building the railroad, will Meridian be permitted to continue on this haul route for an indefinite period of time? H-22 The DEIS takes Meridian's plans a "fait accompli," but DSL should remember that "the best laid plans of mice and men often go awry." When DSL deals with public funds and public safety, they should consider that a failure to make sales as planned is a real possibility. I also have some other comments from the Bull Mountain Land Owners Association. Thank you.

Don Golder: My name is Don Golder. I'm a cattle rancher in Bull Mountains, also I have a ranch in the Coalstrip area. My question tonight, with a few facts and figures leading up to it. I would like to project what Meridian Minerals representative stated on the previous haul into Shepherd at 125 tons, that's 3,333 trips into Huntley.

Their cost on that was $94.12/trip. Now I'm not going to reiterate on that too much because basically what I wanted to talk about was that in the DEIS it projects 45 truck drivers on this new haul. Now I took that at 40 hours per truck, per driver, per week. That would be 1,800 man hours per week. At 1,800 man hours, if you consider that there is a two-hour round trip hauling 40 tons, with a set of doubles, that is 900 trips per week to load 3 unit trains totalling 36,000 tons. Now what this is, is their projection of the drivers equated into man hours, does equate out to 3 train loads per week. Now we realize that isn't what they want, or maybe it is - I don't know.

Nine hundred trips per week is 150 trips per day on a six day week, or 6.25 per hour. Maximum capacity at this figure would be 1,872,000 tons shipped annually. Now this triggers the railroad. I appreciate the fact that they probably don't intend to haul that much coal weekly into Huntley, but nonetheless, their projection is 45 truck drivers on a 40 hours man week, is 1,800 man hours if it is a two-hour round trip figure, that is 900 trips at 40 tons per trip. H-23

Now contracting trucks with a local firm at $72.00/hr at 1,800 hours is $129,600 weekly, or $6,739,200 annually. Now, this was a reputable contractor in this city that I got these figures from, particularly to find out the profit margin, not necessarily what you could scab this in for. H-23

Thirty-three percent of freight costs would be $2,223,936.00 annually if they went for one train load per week instead of three.

Now the issue that I would like to point forward more than anything, is the fact that you are looking at 41 miles from the mine mouth to Huntley. Now if you look at the alternate solution of 14.4 miles from the mine mouth down Rehder Coulee 10 miles on 87 into Roundup. Now what I'm trying to say is that it is 35 percent of the haul road into Huntley, which is a considerable amount difference. The freight bill per unit train would be $778,377.00 as opposed to $2,223,936.00. The question I would like to ask is the differential in cost of hauling that into Roundup per unit train as to hauling it into Huntley of $1,445.449.00 annually. How much track should that lay on the existing railroad bed from Roundup to Cushman that Meridian already owns? H-24

The exposure to public roads for coal hauling would be reduced by 75 percent if they use that 14.5 miles because only 10 miles of that is on public roads, U.S. 87. Cost of repair to the public likewise would be reduced 75 percent. Now traffic hazard exposure would decrease, I'll estimate at 90 percent, mainly because the majority of traffic hazard is on 312 between Billings and Huntley. H-25

Now if Meridian is in earnest about developing the Bull Mountain Mine, their capital expense, their permanent installations, would be the construction of a coal silo and train-loading facility at Roundup and the laying of the track west to Cushman. The way it now stands, Meridian has virtually no major capital expense to put into this. Now I can appreciate that fact that they are trying to get their feet off the ground, but nonetheless, there is that to consider. H-26

This would also eliminate the construction of 33 miles of new railroad for the mine mouth to Broadview at their projected cost of $1 million per mile which is $33 million. That seems to me to be a much larger capital outlay.

Now if Meridian Mine does prove successful for them, then they could invest in a conveyor belt of air tubing conveyor into Roundup to move their coal therefore getting the haul trucks completely off of public roads. I think that it is something that they should eventually look into. I do feel that the objective is to move that coal to Roundup, put it on the existing right-of-way, and move it on back to Cushman and get it on the road and be gone with it. Why spend all this extra money puning in a tipple here in Huntley or building 33 miles of railroad that when they are done with it in a 30-year period, there is still going to be the scar of that railroad? If they did use a conveyor, air conveyor or conveyor belt for 14 miles into Roundup, at the end of that point, it could be taken up and hardly have any scars left on the area. H-27

Esther Bengston: Esther Bengston, Senate District 49, Shepherd. I'm no stranger to this issue, as you all know. I first of all would like to thank the Huntley Community Club for being so thorough and professional in addressing this issue, but one particular issue that I would like to address is the "orphan highway". In 1988 and 1989, this was the top ity for upgrade and maintenance in Region 9 and the people of this area signed petitions, at least 500 petition signers, and sent them to the Department of Highways. Region 9's priority was rejected. We got absolutely no money. The money went somewhere else in the State. An "orphan highway" has no first nihs on any money at all. Montana state law does not allow the earmarking of gasoline tax to pay for any particular road in this State. That is determined on the basis on need. It's all put into a major, general fund and allocated out. H-28

What I'm concerned about is the commitment to accepting public input. There was public support and public input sent to the Highway Department in 1989 - nothing happened. I'm hoping that somehow this process works and that you will be listening to the people in this area. H-29 Their concerns address a lot more than is in the DEIS. There are so many vagaries in this particular mine permitting that I think we have to be serious about considering public safety and health issues.

Greg Pope: My name is Greg Pope, I'm a resident of Huntley and a member of the Huntley Community Club. First of all, I would like to address a couple of issues that I feel were not addressed in the DIES: (I) What will happen to the property values in Huntley after the coal loadout is installed here? H-30 Nobody's has guaranteed us exactly how long the coal loadout will be here. If they can't maintain three billion tons per year, then the railroad will not be built until they can achieve that goal. Who is to say that they will ever reach that goal and once the coal loadout starts coming to Huntley, how long will it be? It could be 30 years or longer than that. H-31 (2) The wildlife was not addressed in the Huntley area. Evidently people don't realize that there is wildlife that uses that area. Even when the Sugar Beet loadout it going on, there is white tail deer, ring neck pheasant, morning doves as well as other wildlife. The people in town enjoy having wildlife in close proximity. H-32

I myself, the front door of my property is 724 feet from the loadout facility boundary. I feel it is safe to say that the people that are involved in the decision making process for permitting this mine, if they were in my shoes and the shoes of every other resident of this community, they would shed a different light on their decision making process.

Another thing I would like to talk about is what Roger brought up–all of these wonderful jobs. Everybody would like to have a job, great, let's put everybody to work. But it is my understanding that the vast majority of the people that are applying for these jobs come from out of State–come from West Virginia. If we are worried about unemployment in Montana, let's put Montana people to work! H-33

Gary Amestoy: I would like to say that it as part of our jurisdiction under the Montana Strip and Underground Mine and Reclamation Act and MEPA, jobs and economic development is not one of the criteria that we are able to use. While we all can appreciate the impact that jobs have on individuals, and tax dollars, that is not one of the criteria we use. With respect to your concerns about how long a loadout site would potentially be used here in Huntley, that is an issue we have discussed very seriously in-house and I know that Commissioner Casey is giving that a lot of thought. We are hearing what your concerns are with respect to the loadout.

Al Evans: I'm Al Evans, Director for Fergus Electric Co-op and a resident of the Roundup area. I'm here representing Fergus Electric Co-op's Board of Directors and wish to speak in support of the Meridian Bull Mountain Mine #1. Verbatim testimony is presented in Letter 5.

Marshall Anguiano: (hard to hear the comments - too far away from the microphone) I'm the one who lives 500 feet from the site. I definitely am not for it! It would like to see any one of you put your house where mine is and live with the dust and mess. I have a little girl now, none of this money is worth anything compared to my little girl. If she runs out in the street and something happens none of your money is worth that. That is all I have to say.

Dick Walker: My name is Dick Walker and I'm a rancher in northeast Yellowstone County

and southeast Musselshell County. Our ranch lies approximately 12 miles due east from the eastern end of the proposed mine site. I would also like to say that I have served on local school boards and served as a County Commissioner of Musselshell County and it is from these experiences that I direct my remarks.

I believe that when it comes to the environment we have all grown up and come a long ways. When I think back into the last century when the Anaconda Copper Co. raped the land and left, I think it left a bad taste in our minds and we can no longer accept that kind of activity. I think industry and the environment have to come closer and closer together. No longer can a huge conglomerate rape the land and not be responsible. However, we are living in a modern industrialized world with a standard of living next to no other country. School districts need more money, cities and counties need more money to provide services that you and I demand and where does that money come from? It comes from industry, taxpayers that own property, it comes from honest every day workers that hold down jobs. It is from this need that we have a conflict between industrialization and the environment and somewhere we have to reach a middle ground. We have to agree that no longer can we pillage the land but on the other hand we have to agree that something has to be added if we are going to achieve these services that we demand. I think the process is working. I think the EIS process here in this room is a good example of how it works. It allows you to give valuable input on impacts to your area. I think it is incumbent upon these agencies and upon the industry involved to look at these comments and to assess their impact and to make the appropriate changes. I think, when you read through the DEIS, you will see that many of the impacts have been identified and remedies put forth. Though not all these remedies are acceptable to everyone, there are some losers and some winners. That is the way it is in every day life. That is the facts of life.

One of the concerns in our area is the effect of the mine on hydrology - water. I'm 12 miles away from this mine and I too have concerns even though I'm somewhat out of range of it. I certainly can't tell those people who have land adjoining that their worries are unfounded, but they have in place monitoring and studies, on-going, that assess the previous water levels and that will conduct the cost of monitoring of the impact of the mine as it proceeds. They also have put forth some remedies, water lines, alternate water sources, to mitigate these problems. Not ideal maybe, not as good as it was, but they are mitigating factors. Nobody suggests that the solutions are perfect, but I think in most cases the solutions presented are valid.

Traffic - I know this is a vital concern for the people in this area. There have been numbers thrown out and what not. If I was living in this area, I certainly would be concerned too. If I had kids I was putting on a bus on this route, I would be concerned. But let's put this in perspective, and these are numbers that come from the Department of Transportation out of Helena. At the intersection of 312 and 87, the traffic count is 7,100 vehicles per day. Coal truck traffic would be 192 per day - 2.7 percent increase. At 312 adjacent to Huntley across the river, the vehicle count is 2,300 vehicles per day. The impact of this increase would be 8.3 percent. So I think we have to put this in perspective when we consider the many hundreds of farm trucks hauling beets during beet periods, or grain to the barley bins, or hauling silage, I think it's all relative. They are all very important vital industries that keep the wheels of this country turning, and so is the coal industry–so is the coal industry. We like to wake up in the morning and turn the light bulb on. We are in a work market also, and I think we have to keep that in mind.

As far as the direct impact to the counties - Musselshell County, the taxable valuation would be almost exactly double. This county, the oil revenues as they have been taken out and the new calculation process, the taxable valuation would be approximately double. Now this H-34 would be a considerable impact to those local governments providing those services. Revenues in Yellowstone County, I do not have figures for those, but they would be substantial. They would not be nearly as great on a percentage basis as Yellowstone County because it is a much larger county.

In summary I would say that I favor this permit providing that the regulatory agencies, the permitting agencies such as yours, be responsible and that they keep Meridian's feet to the fire until they have addressed every one of these issues and lived up to the conditions of that final EIS. Thank you.

Bill LaFebre: My name is Bill LaFebre and for the those people who don't know where I live, it is right on the corner over here. So we are talking about traffic and noise pollution and all this. I live on the corner of Nommis and Northern. Today, because of this thing, my wife counted the bull haulers - 22; I've counted them and they start at 2 o'clock in the morning when they start jacking their jake brakes and waking you up. You've got noise pollution.

You talk about your accidents, we have people in this town that drive vehicles, pickups, that tear up the streets way over the 25 MPH limit. Marshall said something about his little girl, my wife and I just adopted our two little boys, one will be three and the other will be four in the next two or three months. We live on this corner - it is Northern where they turn to go to 312. We have traffic - when the east bridge was closed, all your oversized loads went up there, and everything - there is trailer houses. There is still people that cut across 90 that are going north that don't want to go through Billings who come down Pryor Creek and head up to 87. So when you're talking about all this traffic, and I guess I'm biased because I drive truck for a living. You have professional drivers. How many times have any of you pulled out, driving your four wheeler and somebody pulls out in front of you, a farmer pulls out with his tractor or machinery and pulls out in front of you. Is that the truck driver's fault? I don't think so.

Talking about dust pollution - my mother lived about 1000 feet from the experiment mine up there. There wasn't that much dust problem. She was there - there wasn't that much dust problem, very seldom, and with the environmental thing that is going on now, they have it rectified. I think that they have the dust controlled. The environmentalists will be on this as far as the pollution problem is concerned. I just don't understand why people are so against this in this community when you have all these
other problems going on with the people right here.

Jim Pope: My name is Jim Pope. I've been a resident of the Huntley area all of my life, nearly 64 years day after tomorrow. There are several things - I just got back into the country, I've been gone all summer and I've only had this draft copy for just a few days, so I haven't been able digest all that is in this thing.

My name is mentioned in this twice and I want clarification in the final EIS on this. It H-35 is stated that I was the President of the Huntley Community Club when in fact I was the Vice President. This was in Chapter 3, Page III-44 under Recreation. Under Chapter 4, Page 4-51, also in Recreation, it is stated that "due to the existing traffic load on Heath Street, most of the Huntley residents do not use it as a recreation route." This was from a personal communication with me by a telephone call by somebody from Tetra Tech, I believe it was, from Helena. The street that I was referring to in that conversation was the Highway (old Highway 10 - Northern H-36 Street) leading out of town, northeast to 312. This is a narrow section of road and that is where your traffic is. He threw in Heath Street on this! I thought this was kind of peculiar that somebody would make a phone call from Helena and want to make a judgment on that phone call. Why didn't he come down here to the area and address the issue here rather than make a phone call to somebody that didn't have a map in front of them for one thing, and want pertinent information that you could put in an EIS, for gosh sakes!

There are a few other things that I did find in this statement. It's stated in there that H-37 some of the figures that were used for the air pollution, dust problem, and so forth, that went on here in town, would lead you to believe that there were monitors here. There may have been monitors up at the mine, but I fought tooth and nail to get monitors down here while this was going on - there is a gentleman that can attest to that sitting in the front row there - they didn't have it available. They didn't need to make it available because it was strictly a temporary thing. Now here we're talking about another temporary loadout until such time as they can get a H-38 permanent installation made. Is it going to be the same thing then? You state that you have three meters situated around this proposed facility. Now, it doesn't address who is going to do the reading of these meters, who is going to record the readings - we need to know that here. If it is going be left up to Meridian, we just as well forget the darn thing as far as I'm concerned!

Comment (no name given): I think that this is a good point that he made - that we have a third H-39 party involved in some of these situations. A good example in Musselshell County, the Lower Musselshell County Conservation District applied to the Coal Board and received a grant to do some independent studying and monitoring so that they could mitigate this issue between the landowner and Meridian, so we weren't looking at biased points of view totally.. So I think it is a very good point.

Ella Dugan-Laemmle: I've been a resident of Huntley since I was 5. One of the reasons I chose to stay here, my husband and I, is because it is a quiet little community, I know everybody here, and I'm also a new member of the Huntley Community Crisis with all this going on. To start out my statement - I'm completely opposed to the coal dumping here in Huntley. I'm triple licensed: I have three licenses in the State of Montana, two licenses are national. I'm a licensed Professional Counselor, a Certified Rehab Counselor and a Certified Chemical Dependency Counselor. I will address what this will do to the mental health of the Huntley Project community.

First license: LPC - the mental health. I'm going to read some diagnosis of what this could do adults and children. Post Traumatic Stress Disorder, Dysphonia, Major Depression, Recurrent Minor Depression. Children - conduct disorders, attention span disorder, educational barriers, avoidant personality disorders, passive/aggressive personality disorder, adjustment disorder with anxious and depressed mood, anxiety disorders, organic anxiety syndrome, organic personality syndrome, delusional disorder, dream anxiety disorder, sleep terror disorder, somatization disorder, sleeping disorder, insomnia disorder. Those diagnosis in layman's terms will costs Meridian billions of dollars! Meridian will be liable for the mental health of every adult child from 312 to Huntley Project, all of Huntley Project, Pompeys Pillar, Huntley, Ballantine, Warden, all of it. I'm not counting in Pryor Creek Golf Course and all the people that go to that which are not locals. I'm not counting in Homesteader Days with all the people that come to Homesteader Days. I'm not counting in Lewis & Clark - there is a land mark right where Roundup road comes into 312. It is a national monument landmark for tourism to go down 312 to come see the monument. I'm not counting any of those people that this will affect.

Children will have nightmares, cannot go out in the streets and play because they might get ran over by how many coal truck per day? Parents are going to have nightmares about the H-40 children getting ranned over. It is going to play on each other continually. Or their pets getting ran over.

Farmers - they say that there is going to be room for your beets in the beet dump -good H-41 luck! With a pile of coal that big, how are you going to get your beets to the dump? With the traffic that is going to be in and out of there, with the coal and with your beets, out of the four months of the year, the congestion of trying to get in and out of there is going to be unbearable.

The pollution from the coal onto your beets - what kind of stress is that going to create H-42 for you? Will you have to drive your beets to Billings? How long with the coal be there? They say for 30 months. As some of the testimony has said tonight, the months keep going up.

There is going to be mental health stress due to the traffic. There is going to be increased depression to people. The noise level is mental health. It is not safe to go to the park. From the corner of the coal dump to the corner of the park is 750 feet, that is our recreational H-43 spot where the children play, where people come from Billings to picnic in that park. What is that going to do to our mental health when there is noise level and traffic?

What happens when people get depressed? They start to drink, they abuse their children. The cases of child abuse will double. There is going to be loss of jobs because people can't sleep and you're going to have to pay for retraining. There is going to be continuous fighting of family, of friends. The increased alcohol and drug rate - consumption due to the stress and depression.

The church - how far is the church from the coal dump? Maybe a 1,000 feet? Our little community church where we go and pray to our God. That is going to be wonderful in the midst H-44 of the coal trucks running back and forth.

I want to give you some numbers. I took the privilege of contacting our lady postal service here in Huntley and I'll give you some numbers of how many people this will affect. This is the only mental health, I haven't even got to the medical or the CD portion yet.

On RR 3, which is 312 there are 700 families.	700	
Huntley there is 260 on the rural route.	260	
172 in box numbers	172	
Shepherd there is 600 on the rural route and	600	
200 on boxes.	200	
Warden there is 500 rural and box together	500	
Pompeys Pillar there is 100	100	
Ballantine there is 200	200	
That gives me a Total -		2,732

If every family averaged three children per family (2,732 x 3 = 8,196) That give me a total of 8,196.

You take the mental health of a child from the time they are born, because of the child abuse, because of the depression of the parents, because of the drug and alcohol, because of the stress of the pollution. You take a child from pre-verbal to adulthood. We are averaging 70 years. You times that by 70 years which comes to 573,720. Now times that by what I charge per hour (70/hour) times 52 weeks in the year is 3640. That comes to a grand total of $2,888,344,800.00. And we are only talking about mental health. We haven't even addressed the CD or the medical.

(8,196 x 70 = 573,720 X 70 X 52 = $2,888,344.00)

There is going to be depression due to the ranchers having to travel back and forth. The water H-45 usage in Huntley - on Page 18 of your book it says that Huntley needs another water tank. Who is going to pay for that? The taxpayers?

On Page 9 - you said that Huntley is ideal because of flat land. Why isn't Broadview or H-46 Acton ideal? It is right in town in Huntley, and in Broadview, the proposal would have been out of town.

Page 20-24 is Wildlife - you never addressed it for Huntley. That effects our mental H-47 health. We like the fish, Yellowstone River, the eagles nesting, foxes, mountain lions, deer and birds. Never addressed for Huntley. What is that going to do to our mental health?

Roadways - The stress that that is going to do. The old road being ripped apart - who is going to pay for that? Taxpayers!

Page 28 you said that currently there is 10 percent of heavy vehicle traffic. My question H-48 is what is going to be the increase in the percentage of traffic after the coal trucks go 24 hours per day on Highway 312 with 192 trips per 214 hours estimated?

Page 29 it says that the accident history on Highway 312 is 1.78 severity which is over H-49 1/53 normal severity. So in other words the wrecks on the old road are more severe. With more traffic at 192 trips per coal, what is the severity and the number of accidents going to be? What is that going to do to the mental health of the community?

With the increased traffic and increased noise levels constantly going, it is going to affect the mental health of everybody - Rural Route 3, Huntley, Shepherd, Warden, Pompeys Pillar and Ballantine. It is going to deteriorate the mental health. There is going to be medical claims due H-50 to hearing problems.

There is no fire protection in Huntley. With that big of a coal dump, what is that going H-51 to do to your mental health? Living here in Huntley, thinking that that baby could go on fire at any moment and there is no way to put it out.

What is going to be the social well-being of people's mental health with coal dust noise, H-52 safety of children, highway deterioration, and intrusion of the coal dumping?

On Page 43 it says that there is currently sugar beet trucks that use the dump and they are not nearly the capacity or the number that the coal trucks are going to be. And they are not physically damaging roadways.

On Page 44 - The park is 750 feet from the dumping site. That is a 6-acre park. What is that going to do to the mental health of children and adults that use that park.

Page 47 - The definition of an industrial area. I don't know where you got the elevator and the beet dump as an industrial area.

Page 48 - Visual Resources. What is that going to do to the mental health of people having to see the coal dump for four years or more?

Page 2 - Regional weather and local winds. You can not use Billings to estimate Huntley H-53 winds. The weather differentiates between here and Billings 10 degrees or more and so does the wind.

Pollution and ecological views of the Yellowstone, Pryor Creek and irrigation. What is that going to do to our mental health having to worry about that and everything else I have just said?

At $2,888,344,800.00 is that worth the mental health of those people?

My next issue is my other license, CRC - Certified Rehab Counselor. A lot of people have made their concerns about the medical issue of the coal dumping. I have not heard any specifics on what coal dumping can do to your medical health. I work with people that are disabled due to all sorts of things - accidents and medical well being. OK? There are three causes of death in the U.S. (1) heart, (2) cancer, and (3) stroke.

Cargiogens(sp) of cancer is coal dust. How many people are going to have cancer due to the dumping site? H-54 How much money is that going to cost everybody? Cancer is described as an unusual and rapid and uncontrollable growth of abnormal cells. One in four persons in their lifetime gets cancer. With the use of cargiogens(sp) such as coal dust, that increases. Cigarette smokers and people work around asbestos and coal dust are at risk of developing lung cancer. H-55 (Page 206)

Page 208 - Hypertension - High blood pressure also known as hypertension occurs commonly in middle age and elderly men and women. It is the leading cause of stroke. It can cause damage to the heart, brain, kidney and arteries. It increases the risk of heart attack, congestive heart failure and kidney failure. Hypertension is caused due to stress.

Page 212 - Pulmonary disorders. Bronchial asthma. Bronchial asthma is characterized by slow rapid breathing, cough and shortness of breath. Ideology and diagnosis - causal agents can be infection or allergic reaction to some environmental agent such as air pollution. Treatment and prognosis - Oxygen and antibiotics may be given or allergy shots. How much is that going to cost the citizen?

Emphysema - Emphysema is the destruction of the walls of the lungs. At first small black holes appears. As the disease progresses, the holes become larger and tear the membranes. This interferes with the normal exchange of carbon dioxide and oxygen. Breathing becomes labored and impaired. The lungs try to compensate to the decrease in viable lung tissue by enlarging. This forces the chest cavity to increase in size giving persons who have advanced emphysema a barrel chest appearance. What they do for emphysema is bed rest.

Let me tell you what bed rest does to a person. Disability consequence of bed rest. Page 55. It destroys the joints and connective tissues. The moving parts of the body, joints, ligaments, tendons and the related muscles and skin all have a normal range of motion which is necessary for proper performance of physical tasks. Any decrease in the normal range of motion is called "contracture." Contracture of muscles, tendons, joints and skin are among the commonest complications of bed rest. Atrophy which allows disuse of muscles. Bones - the rate of calcium removal begins to recede the rate of deposition and within three days there are miserable increases in the urinary losses of calcium. The bones soften and weaken - osteoporosis - and even ordinary forces such as those encountered during wheelchair transfers, physical therapy or minor falls may cause fractures. Urinary Tract - inactivity increases the urinary calcium load which may be three or four times normal within three weeks after the onset of complete bed rest. Heart - The heart is a muscle and it undergoes disuse atrophy like any other muscle when a patient remains inactive. Being weaker, it can pump less blood per contraction, so it must pump more rapidly to move the same amount of blood per minute. Circulation - a common and potentially lethal complication of bed rest is the clotting of blood in the deep veins of the lower limbs and lower abdomen. It affects every organ in your body - bed rest does.

You get bed rest due to emphysema. Emphysema is caused by coal dust.

It affects your pulmonary system. Gives you chronic bronchitis. Physical disabilities - they will liable to have every person that comes down with this to repair them. The medical costs, the retraining to have them into other jobs. A person can become completely disabled due to that coal dust. So we just increased $2 billion to whatever you can put a life on. I don't know what that answer is. I sure wouldn't want to pay for it. People are so concerned with gaining profit of big business. Is a big business worth that many lives? No, I don't think so.

The physical ailments that would cause - we still have car wrecks with school buses being wrecked and all those people being disabled and Meridian being liable for every one of them. H-56

My next license is Certified Chemical Dependency Counselor - When people get depressed, they increase their alcohol consumption or drug use. If you want a reference you can look at my DSM IIIR, Page 83 - 111. Residential treatment for 30 days is $1500. When a person is chemical dependent, you can not just go to residential treatment, come out and be cured. You are going to be going for out-patient therapy treatment for at least two years. At $70/hour every week. When a person is CD, they are depressed. When a person is depressed, they're chemical dependent. When a person is disabled, they're depressed and the chances of them becoming CD, have just went through the roof. Meridian is going to be liable. We've just outcasted that $2 billion and we are up into $50 billion. If you can put a price tag on people's lives, which I can't. H-57

All of these in your book here say there will be no long term impact, Huh! Everything I just discussed is long term impact, it is a lifetime for everyone of these people. I haven't addressed the Pryor Creek Golf Course, I haven't addressed the people that come to Homesteader Days, I haven't addressed the tourism to go to Pompeys Pillar rock.

I am opposed to having the coal dump here in Huntley without a question because I don't think it is worth that many lives and nobody's profit share is going to surpass that number that I gave you in black and white. You can put it somewhere else where it is not going to affect so many lives. Broadview wants it, put it there. $33 million to put a railroad line. We've already gotten to $2 billion just on the mental health issue. That's not counting the physical or the CD. And I will have it all in writing, believe me!

Nicol Price: With the Huntley Community Club. Listening to some of the things that were being said here tonight. I do have two more comments. In talking about the park. The park land is owned by Burlington Northern. The park has been maintained by the Community of Huntley for a number of years. One of the things that will be taking place on the site the rail cars will be loaded on will come half way into that park when they are being loaded. So you will have children from within here to the rail road track in a Park where they play. H-58 The impacts to a child when one of those cars moves, or thinking that it is not moving and they do, we could see a child really seriously injured.

The other comment I would like to make is on the transportation issues. I think that a truck that holds 40 tons of coal is a whole lot different than a car. I think that the problems of stopping on icy roads, blowing snow into cars when the snow is on the roads, or a whole lot different than when you pass a car. I have been on the interstate when trucks pass you and many times you are totally blinded. Our 312 does handle an immense amount of elderly people going into Billings and they have always used old number 10 and they still do. H-59 I think that is one of the issues that really needs to be addressed here. The fact that when the trucks come into the beet dump they come off the interstate, they come down Northern Avenue, and they whip in, get their beets, and they're back on the interstate. H-60 They don't go on to 312. We do get a lot of trucks coming off the highway in through Pryor Creek that come up here and use 87 for the simple reason that they have not been able to use the bridge at the Lockwood Interchange. That may change in the future, they have two good lanes on the bridge now and so whether they are allowing trucks on I don't know. We have been dealing with the big wide trucks coming through this community, they take 312, which then puts more big truck traffic on the little road over here to go by. You also have an immense amount of people who drive the road who are not cautious. They are in a hurry to go someplace. They all act like they should have been 10 minutes ago. H-61 So the chances of a truck taking off - the gentleman from Roundup that was here talking - the intersection at Roundup when the transportation people were here - that is a bad corner. For one thing it slants wrong. The trucks are going to have to come this way and curve and then totally make a u-turn bend to come back onto 312. They can't just come into that intersection straight. So they are going to be destroying the buffer zone that is part of that. So when you get children on a school bus coming off, or walking on that road, because there isn't any place. You have parents who deliver their children to the Independent School in the morning and the evening, you will have a lot of traffic building up on that corner. You have trucks coming down there when it is icy, sliding into that intersection with a lot of cars that do travel it. The thing is that there are no stop signs - there is a stop sign but there is no - when people are coming this way, they have to stop and wait for these guys to pull out. So you could back up traffic coming off of 87 a whole big way. H-62 Waiting for the traffic coming out of Billings to come on to 312 to come through. I think that is an issue that has not been addressed in this draft because it is going to make a difference. There are no lights there. And so when you start having to have a truck with it pulling out onto a road that has a lot of heavy traffic, there isn't places for them to pull out. H-63 So whether it's only an 8 percent - something different in the total numbers of what's taking place here - you are putting huge trucks on a road, not cars - and there is a difference there.

Jim Cunningham: I was curious, I have a lot of friends that live in Shepherd and they drive right past my house and then hit the interstate in Billings where the construction is. I don't understand - that road from Shepherd to Billings through K Mart is already so jam packed it is unbelievable, it is already dangerous, it is already overrun, and these people are driving miles out of their way to go back to Huntley to hit the interstate to drive the other way. How can anybody even think of adding on to this thing semis or any kind of access to that road? H-64 It is unbelievable to me because these people live and drive it day in and day out, and they will not drive through the Heights and drive through Shepherd road because it is too dangerous. There are too many cars and too much traffic, and they drive through Roundup. They drive by my house to go to the interstate and then go into town.

Kim Mueller: My husband and I have lived here for over 14 years. I think the best thing that we can do is the people that are sitting here listening to what your friends and neighbors have said - go home and call your friends and neighbors! Tell them what happened here tonight! Let them know that one morning that they could wake up and there would be coal trucks coming and coming and coming! And a mountain of coal in our back yard! Is there an address that people can address their comments to? H-65 Or an address they can write to?

Darla Day: I would like to address the transportation issue on Highway 312. That road is not suitable for heavy industrial traffic. There are no pull-offs. We have a rural route on that road and she serves mail boxes and I don't know how many people have had close encounters with this lady, but it is very critical that we have pull offs on that road, not only for her but for anybody who does have car trouble. H-66

Also, it is my understanding that there will be no road maintenance? There will be no road improvement of that highway? H-67

Also, fire protection in Huntley. It is my understanding that we are now defunct so we depend on Warden for fire protection. H-68

Employment. Fifty jobs and that is just hauling back and forth from here to Roundup and maybe 12 jobs at the loadout? Out of State? I don't think - to me this does not really address the benefits for Huntley residents. H-69 I think we need to look at that.

Dave Swyhart: I live south of Huntley, so the dust doesn't bother me, but I do go up to the Roundup area to get wood sometimes. My address is not to the farm trucks and the elderly people that drive up that road, because they will drive 40 MPH. I happen to hear the comments of that gentlemen that said he was professional truck driver and they are professionals. Well I want to address the three pretty close calls that I've seen with professional drivers of those heavy trucks. They were all trying to pass, one on a double solid line with oncoming traffic on it. I had to almost come to a complete stop one time. So you can't say a professional driver is always going to be courteous, so you kind of have to watch that sometimes to. H-70 Especially when a truck encounters a pickup with 30-40 bales of hay on it traveling 25-30 miles an hour up there. He's getting paid by the hour, he's not going to sit behind that pickup for ten miles waiting for a way to get around him. He's going to make his time and get along. I think that ought to be a very serious consideration on that because there are a lot of elderly people in this area which I happen to be one of them. I'm a senior citizen, I do not drive 30-40 mph, but I have seen a lot of them that will be driving up that road 30-40 mph because they are elderly. They do not have exceptionally good eyesight and so forth, they are going to be driving fast and that ought to be a consideration. It should be really looked into. It is something - there are farmers and elderly people that should be considered.

Question: (Gentleman did not identify himself.) Have you ever driven from Billings to K Mart to the Huntley/Shepherd area? Have you every driven that road during rush hour morning or evening? H-71 There is a lot of traffic up there!

Ella Dugan-Laemmle - Question: I was wondering why mental health care, medical and CD was never taken into consideration in that document? H-72

Bonnie Lovelace: Under MEPA we are required to address socioeconomic issues and those have been historically and typically been defined in the issues we cover. Mental health issues, medical issues other than medical services, have typically not been addressed under MEPA. We quite simply followed the standard. Done by professionals who typically do address those kinds of things. Again, it is not typically done in an environmental document.

Ella Dugan-Laemmle - Question: Why?

Bonnie Lovelace: I can't address that. I don't know why. The list of items to be covered under MEPA simply states socioeconomics. I will simply say that for many years maybe we should have been addressing those things, we typically have not. It is something that I will have to go to our attorneys and say "should we be", we never have. H-73 That doesn't mean that's right. You are more than welcome to discuss it with your legislator and have it added to the Montana Environmental Policy Act.

Gary Amestoy: Thanked every one for coming and adjourned the meeting at 9:45 p.m.

Billings, Montana
9/23/92

Gary Amestoy, Administrator Reclamation Division of Department of State Lands, opened the meeting at 7:30 p.m. (See Huntley meeting opening.)

Monica Lindeen: Last night I spoke as a representative for the Huntley Community Club and other concerned residents of the community. I'm not going to repeat the same statement that I did last night. Tonight I'm speaking in two separate capacities: (1) as an elected official for the Huntley Water District and (2) as a concerned citizen of Huntley who will be extremely affected by the proposed loadout. Verbatim testimony is presented in Letter 14.

M.D. Brewer: I'm M.D. Brewer from Roundup, County Commissioner. I would like to read my statement here. Verbatim testimony is presented in Letter 12.

David Shuler: I'm Dave Shuler, General Manager of Fergus Electric Co-op and a resident of the Roundup area. Ladies and gentlemen, Al Evans spoke to this last night. For the people that weren't there, I would like to have our position known. Verbatim testimony is presented in Letter 5.

Don Picchioni: My name is Don Picchioni, I'm President of the Musselshell County Development Corporation. I have a letter from the District Superintendent of Roundup Public Schools that I would like to read into the record. It is addressed to Mike DaSilva. (Verbatim letter is presented in Letter 11.)

I wanted to read this letter because I felt it was a written in a very clear, concise, factual manner. His statement, his letter, and a lot of the comments made last night dramatize the difference between rational vs. emotional thinking. The DEIS and the DSL were characterized last night as being vague and shallow by an emotional opposition. Well, I too am biased. I've got very strong opinions on this process and I feel the mine should be permitted. But when I read the draft EIS, I felt that it was overly critical and over emphasized in insignificant matters. So this means the DSL catches hell on both sides. Maybe this means that since they are playing a middle, rational approach to this problem, maybe they're more in the right.

Some of the concerns brought up last night were very valid concerns, but I feel they emphasize the need for flexibility on both sides. The need for all of us to work together to solve these problems. If we do put our heads together we can come up with decent solutions. An example of that is Highway 312. I didn't realize until last night that it was considered an orphan highway. It was stated that there were no funds for the rebuilding of this highway. I guess I find that hard to believe. It seems like maybe there is a need for a creative approach here. In fact, possibly, an impact grant from the coal board might even be obtained to fix this road. But that is only going to happen if coal is hauled over that road. So it might even be a benefit to that area - the coal hauling. Solutions are always available if we are willing to sit down and discuss them rationally.

The Musselshell County Development Corporation has been and continues to be very strong supporters of the Bull Mountains Coal Project and feel that this Draft EIS emphasis and Alternative #1 is the only fair consideration.

Nicol Price: My name is Nicol Price. I'm a resident of Huntley and part of the Huntley Community Club. I spoke last night and my statements will be different tonight. Verbatim testimony is presented in Letter 10.

One thing that was not addressed last night in the air quality - when we had our previous meetings, we had been told that the air quality people would only give the Huntley loadout a permit for 18 months. What do you plan to do with the rest? B- 1

John Scott: I'm John Scott from Ballantine. I've been involved at several public meetings concerning this loadout site back in the days of the scoping for the EIS. And I really have to question the credibility of some of the providers of data. The reason I say that--in one case, referring to the time span that the proposed loadout site at Huntley would be used, we have been told everything from 18 months to 30 months. B- 2 It seems like whenever we nail down a time period, it is always changed. It was made 30 months after the Yellowstone County Air Quality said that there would be a permit given for 30 months and then they jumped on the 30-month period.

Another incident that I'm thinking of here is that I had a meeting approximately January 25, with Bob Oschner to discuss some of the problems that the people of Huntley might have with this proposed loadout site. The people were worried about the continuous hauling through their community until the time that the mine reached a 3-million ton contract per year and at that B- 3 time they would be justified to build a railroad. I was guaranteed by Bob that no coal would be hauled until the three million tons were contracted because it was not feasible to truck it. According to the DEIS this is not the case now.

Another thing through the scoping that we were told, and during the test loadout, we were told that they could not use water to control their dust on their coal pile. They did on one weekend because it was so bad they couldn't even avoid it. They told us that they could not use water and the reasons was that it created moisture in the coal and that it cost them several thousand dollars to put the sprinklers on it for week end. This is dry coal and to take the coal B- 4 and dry it in Roundup and bring it to Huntley and put sprinklers on it doesn't make very good sense, but within the DEIS that is how they are going to control their dust is with water again. So I question whether they will even worry about controlling the dust.

Now I'm going to skip to the question of jobs. I know everyone in the State of Montana wants jobs, and according to the DEIS, 222 jobs will come from Billings, 21 from rural Yellowstone County, 38.95 from Roundup, 18 from Musselshell County. Within the figures in the DEIS they are saying - I have no idea where they got those figures - but using the Montana 1990 census and data from the HRVC, the number of people qualifying for public assistance from these jobs will be 99.9 from Billings, 9.45 from Yellowstone County, 17.5 from Roundup, 8.1 from Musselshell County. These are people who will qualify for welfare going on the figures that are in the DEIS. Montana Employment Service, at this time, says that there is approximately 1,500 people that have put in applications to work at the Meridian Minerals Bull Mountain Mine, of that approximately 400 are in-State people, and near 1,000 are out-of-State people. The biggest percentage of people applying are from West Virginia. Thank you.

Ellen Pfister: My name is Ellen Pfister and I ranch on the south side of the Bulls, adjacent to the south side of the proposed Bull Mountain Mine No. 1. In reference to Mr. Scott's remarks about out-of-State people applying for these jobs, I talked to a fellow in West Virginia today and he assured me that they could fill the needs for certified miners in that mine 10 times over with fellows from West Virginia.

Anyway, to get to other portions of the EIS - reading this EIS I feel sort of like Casandra. The subsidence predictions in it are, I think, supported fairly thinly. I don't think the prediction with respect to the water correspond with actual encounters with regard to springs particularly at higher elevations. I have studied the mitigation plan quite thoroughly. If B- 5 subsidence occurs as they predict it to occur under their scenario, the mitigation plan may work. If subsidence occurs with spring loss at higher elevations and springs resurfacing at lower elevations down the hills, their mitigation plan is out of luck. I think that perhaps there should be two mitigation plans on this scenario. I checked the references, the bibliographies cited in the back of the EIS, and I believe there were a total of six - two of them were in-house publications that are apparently the primary reference and predictors, the others were a couple of studies that I recall do not deal particularly with water but more with predicting subsidence, and the others were methods of prediction. One of them is an english handbook that I understand is the basis for predicting subsidence, but it's 17 years old now. There have been on-going studies on subsidence prediction, particularly in hilly terrain and I think that this is an area where this EIS is particularly weak. By my calculations within the life of the mine, there is approximately 30 linear miles of very steeply dissected terrain that will behave differently than subsidence in level B- 6 areas. The subsidence will be steeper, there will be more of it collected at the bottom of the hill. There doesn't seem to be any discussion in the EIS of how one would reclaim these hills if they are denuded of vegetation due to subsidence and erosion.

There is a well mentioned in the EIS, Well No. 6270-03. I was unable to find an exact location for it. The spring that they propose to use to mitigate is approximately 2 miles north of a well that we drilled on the north side of Section 5, Township 5 North, Range 27 East. It is almost on a direct north/south line. The prediction concerning that well are that if they pump it at 14-gallons per minute steadily, that it will lower water 5-12 feet within a two-mile radius B- 7 of that well. I'm concerned for our well. It is a fairly new well, it is a solar well, it's 285 feet and is capable of pumping 11 gallons per minute, however we are not stressing it to that point. The elevations are pretty close with the base of our well and the floor of the coal seam on the other side of the hill.

I think it would be useful to put the locations of these kinds of wells in the EIS document. B- 8

Another thing that struck me in reading it was the classification of all waters in that mine area as Class Two. Just checking the TDS levels there were 14 springs in your document that B- 9 classified as Class One waters, the other elements that they listed for drinking water classification were not given in the EIS and I haven't seen those, so I don't know, but I think that it would also be useful information to provide would be the chemical composition.

As far as the visual effects, there is an old saying that "what the eye don't see, the heart don't grieve," and that is sort of the impact of the mine plan on the terrain and the people who live around it.

One of the things that I noticed was a ranking of the springs on importance to the ranchers. At least 50 percent of the ranchers in that area were not interviewed. I would be curious to know how you ranked them, because looking at the people who assembled that EIS B-10 I didn't see anybody that I would classify as having the expertise to do that for the given operations.

There is another thing with this water. Classification on the springs - ranking a high volume spring as a higher value spring as say a consistent producer of a gallon per minute. From my personal point of view, I would rather have a spring that would produce a gallon spring fairly consistently, particularly through the months of July, August and September, than a spring that B-11 produced 30 gallons in April and nothing in August. Springs that are the consistent producers in hot weather conditions are the one that are drawing their water from the weathered and fractured bedrock, the base production rather than the flash production due to localized precipitation. That is the mostly valuable water production that we have, both for us and for the livestock.

There are many other things that I could comment on tonight, but I won't take your time, but I will submit extensive written comments. Thank you.

Don Golder: I'm Don Golder, I also ranch in the Bull Hills and in the Coalstrip area. So basically coal mining is no stranger to me. Last night I addressed an alternate solution to hauling the coal from the mine to Huntley. Tonight I would like to approach an alternate solution for the subsidence of the long wall mine in the Bull Hills. (See Letter 32.)

I have mined, which I know is completely out of the question - the term they use is backstowing or backfilling, and though it is economically not feasible. If you consider what could take place if they could eliminate the subsidence by backfilling, which eliminated up to a B-12 minimum of 10-15 percent, which in turn might alleviate the problem of the surface water and particularly the perched water aquifers above this mine. Now if you consider the fact that if Meridian is willing to put forth and replace these waters - I have an instance that is in your EIS and it is what they call a "water guzzler" - and in particular what they are talking about here is an area to entrap water into a pond, into a storage tank, and through floatball system send it into a pond - and then particularly what they are talking about here is for wildlife. It has no consideration for livestock. B-13 The design of it would negate the use of it for livestock because it is designed completely improperly.

In the EIS they have blueprint of this particular system and if everything is drawn to scale, what they have for a storage tank is a tank that would hold 216 gallons of water. A 5,000 gallon apron is equipped to collect an inch of rain - 4,364 gallons of water. Now, where in the world are they going to put that in a 216 gallon tank storage? Why do they even bother? B-14

The cost of the 1,000 gallon fiberglass tank, if they would choose to do it, would cost them $2,500 minimum. Now, you're looking at an astronomical cost to produce a little bit of water, and what they are producing is basically for the game. I wonder what they want to do for the livestock?

We produced a spring that produced a gallon per minute, and what they are saying in the EIS is that one of these "guzzlers" is equivalent to our gallon-a-minute spring. A gallon-per-minute spring will produce 525,000 gallons of water annually. A "guzzler" will produce, figuring that you have a 14" annual rainfall, this "guzzler" will produce 43,000 gallons of water. I know these figures are kind of hard to reach out around, but the fact remains that a spring is B-15 there, the spring is always there, and if it is produced right it will continue to be there. In this particular spring we have produced this spring for $1,000, if you sent that water down through cracked aquifers and subsidence, is Meridian going to be able to replace that water? I don't think so! I don't think there is a way they can!

Now if Meridian is serious about the water, possibly backstowing would be an alternate solution - really I think it would. Maybe they ought to consider the cost factor of both of them. B-16 If not, I don't think 1/2 million bond would cover the cost of livestock water in the Bull

Mountains. I think it is something that really should be considered.

Cal Cumin: My name is Cal Cumin speaking on behalf of the Montana Tradeport Authority here in Billings. We support the proposed Bull Mountain Mine, we are in general consensus with the socioeconomic impact findings in the EIS. We do feel, however, that the employment of upwards of 300 people in a basic industry in a rural area of Montana, merits more than what you call "minor impact" in Table 4-5. The same can be said for your summary statement on Page IV, that under Alternative 2, there would be only "negligible to moderate impacts." The non-creation of approximately ___ primary industry jobs in rural Musselshell and Yellowstone counties, when the opportunity therefore exists within the environmental constraints, needs to be considered a "major negative impact." Thank you. B-17

Doug Richardson: 2116 Virginia Lane, Billings, Montana. Verbatim testimony is presented in Letter 37.

Kim Mueller: My name is Kim Mueller and my husband is over there. We have lived in Huntley for 14 years. I don't know how many - you guys were at the hearing last night and you know the Park that is situated across the street adjacent to the stockpile. Did you know that a quiet park with playground equipment, picnic tables, a basketball court, horseshoe pits and mature trees, is located within 1,000 feet of the proposed coal loadout in Huntley? This park is enjoyed by townspeople and folk from Billings. Many times while spending time at the park with our three-year old son, I have visited with travelers from another State which stopped to each lunch, relax, watch their children play and run.

As stated in the DEIS, Chapter 4, Page 52, the Agency concludes that impacts to outdoor recreational opportunities in the Huntley area from operation of the Huntley loadout would be "minor over the short term and negligible over the long term." I believe the Agency came to this conclusion under the assumption that the sugar beet stockpile, near the proposed loadout site, operates on a year around basis. B-18 It does not! Dust and noise generated by this agricultural-based activity occurs for a maximum of four months. I feel the conclusion of the impact to the outdoor recreational opportunities should be changed to read "major to significant over the short and long term," depending upon how soon they can get that rail spur built. B-19

The other thing I wanted to talk about was - as stated in Chapter 4, Page 36, of the DEIS, the agency concludes that the "impact to traffic flow and public safety along the public highways from mining related traffic would be moderate with the potential to become significant during the two to three years that the Huntley loadout is in operation." I feel this conclusion should weigh heavily on the decision-making process. Do no allow the loadout in Huntley. Thank you.

Meeting adjourned at 8:30 p.m.

Roundup, Montana
9/24/92

Gary Amestoy, Administrator Reclamation Division of Department of State Lands, opened the meeting at 7:30 p.m. (See Huntley meeting opening.)

Jay Erdie: I'll address this letter to Mr. Mike DaSilva. My name is Jay Erdie. I'm the District Superintendent of Roundup Schools. Verbatim testimony is presented in Letter 29.

Mark Clark: I'm a resident of 299 Old Divide Road and my bedroom sits about 100 feet off the roadway. So I will be pretty well affected by this being as there are 300 employees going by and 192 trucks every day. I'm just concerned mostly about safety on the highway especially on the Old Divide Road. Mostly, I'm concerned as to whether or not the road is going to be repaired or in any way changed. The reason I ask this is because I intend to make other improvements on my property and if the road is to be moved, I would like to know. Is there any way I can get an answer to this? R- 1

Gary Amestoy: As I said earlier, this is not a question and answer type session, but I would suggest that you - there are representatives from Meridian, Mr. Ted Hanks and Mr. Bob Oschner, and they could answer those types of questions.

Mark Clark: I support this project. The whole country needs more economic growth but I feel it should be done properly.

Robert Clark: Good evening. I'm Robert Clark and a Representative from House District 31 for this area here and it is already a matter of record that I am strongly in favor of this project for various reasons. I understand that there are some people that will be inconvenienced, the people from Huntley that are concerned about this and will see some inconvenience for a couple of years. I guess I have to sympathize with them and I hope they will bear with it and help us get this thing going because we do need it in this area. This economic situation here is poor and has been poor for many, many years and this is something that will definitely give us a boost here.

The road situation, I think I can help answer that. The Old Divide Road with the amount of extra traffic that will be on there, I'm sure that there is no question that there will have to be a lot of work done on that, it appears that over the next couple of years with that heavy truck traffic. As far as the safety goes, that is the only area where there will be a real traffic safety problem with the new road between Billings and Roundup. The tax situation here, I think that the $20 million plus for the schools over that period of time is only one thing that we can consider here. When it comes to the total impact that this mine is going to have on the situation for improving the surrounding area, I think that we are going to see a lot of benefit from this mine, pure and simple.

I would like to compliment the people from the Department of State Lands for putting together a good EIS. I think they did a super job. Thank you.

Sally Armstrong: I'm Sally Armstrong, Mayor of the City of Roundup. I have this letter that I will read and then turn over to you. Verbatim testimony is presented in Letter 28.

Ken Sanner: I'm Ken Sanner. I'm from Roundup and I'm also a businessman. I have some things I would like to point out for myself. First off as a resident of Roundup of Montana, it's going to affect me greatly not having the coal here in Roundup: (1) I heat my home which is one of the best heats and cheap heat there is around, and without it my personal income would greatly sacrifice itself by going to a different fuel; and (2) I also have a business which is a coal delivery business in Roundup, Montana, which greatly supplies the whole town of Roundup and business people. Without the coal here I wouldn't have a job; and (3) I also work at the coal mine, myself, as an underground coal miner. That greatly affects me because I think the job we do out there is well maintained, its safety first, and you also look out for the ecology, you are looking out for things. I tell you, nothing is going to slip by - nothing. The people who work out there are interested because we live here. We do not go some place else and work, we work here and we are worried about what things are going to happen out there at the coal mine. We aren't going to let things slip away like everybody thinks they are. We're greatly influenced by EPA and we are watching out ourselves. We are watch dogs just like everybody else. And I don't think any other community can say that. We are deeply interested in what is going on out at the mine. So - it's locally run and locally employed. I think we are going to watch out for ourselves. We are not going to get carried away with hurting the environment. I greatly support our coal mine here and I wish everybody else would too. I hope the State of Montana will back us up because we need all the help we can get here in Roundup, Montana.

Paul Smith: I'm Sheriff of Musselshell County. I would like to address the impacts to Law Enforcement agencies that will occur because of the Bull Mountain Coal Mine Project. Verbatim testimony is presented in Letter 27.

Kelly Gehhardt: Musselshell County Commissioner. I have a letter here I would like to read and then give to you. Verbatim testimony is presented in Letter 26.

Pete Tully: My name is Pete Tully: I am here representing myself as a rancher in the Bull Mountains and Northern Plains Resource Council and its local affiliate the Bull Mountains Landowners Association. Verbatim testimony is presented in Letter 25.

Sue Olson: Commissioner Casey, Hearings Officer Amestoy, Miss Lovelace and Mr. DaSilva, I'm Sue Olson, County Commissioner of Musselshell County and a rancher in the Fattig Creek drainage near the Meridian Mineral Bull Mountain Mine No. 1. I would like to make my comments in the capacity of a rancher in the area of the mine project.

The hydrology of the mine area has been of great concern to me. My livestock water springs are within 1/2 mile of the mine project perimeter. There are no wells in this area for livestock watering so maintenance of the stream flow is vital. R- 2

I feel another vital link in mitigation process has been added with a grant from the Montana Coal Board to the lower Musselshell Soil Conservation Service. This grant provides a neutral third party to monitor water and wells outside the mine permit area. With this monitoring in place, the trust fund and bonding by Meridian, the plans for replacement of the water you've lost, examples of horizontal drilling, mitigation of any water problems will be successful.

On Page 4-58 of the Visual Resources/Aesthetics it is stated that visual contrast of the waste disposal area constitutes an irretrievable commitment of the visual resources and aesthetics. There is a very short area of travel along Fattig Creek Road where the waste disposal area is visible to the public. If a few well placed pine trees were planted to replace the burned ones along the County road, this area would not be visible to the public. This would mitigate the visual contrast and not be an irretrievable commitment of the visual resources. R- 3

The 35-day comment period is sufficient. This process has been on-going for the last four years and anyone interested in the project has been aware that the Draft EIS was to be presented to the public in August. To extend the comment period for 25 more days could be construed as a delay tactic and would serve no worthwhile purpose.

A comment on a comment on the Huntley Project Hearing - I grew up on the north side of the tracks at No. 3 when the mine was running, there was a huge slack pile, a train siding, a large dump and later trucks dumping slack into coal cars. I can name seven people still living in this area who are over 80 years old and have lived near the slack pile for over 50 years. They are as healthy as people in their 80's can be and most still live by themselves in their homes and have not suffered from lung cancer caused by the blowing coal dust or been mentally disturbed by the noise and problems caused by the mine when is was working. I feel the statements made regarding mental and physical health were greatly exaggerated.

I would suggest that, if the permit were granted to Meridian, in future years, if changes are requested, adjacent landowners and interested parties be notified. I urge approval of Alternative #1. R- 4

Sanford Haugsdal: I'm Sanford Haugsdal, Road Superintendent for Musselshell County. I'm offering the following comments concerning the draft EIS for the Meridian Minerals Co. Bull Mountain Mine No. 1, dated August 1992.

In general, I agree with the Agency's conclusion about impacts to the County roads in the life of the mine in related areas. Two minor typos are obvious in the first paragraph on Page III-25, "Goulding" Creek, and "Bailey" Road. R- 5 The final paragraph on Page III-35 should be modified in the interest of accuracy. It should read "for fiscal year 1992 Musselshell County levied 18.158 mills to raise $93,340.00 for the operation and maintenance of County roads. That amount combined with $114,800 of local government severance tax from oil and gas, at $131,330 of non-tax revenue, provide a total for Fiscal Year 1992 Road Fund Budget of $339,470.00." R- 6

On Page IV-36 it is stated that the Agency concludes that impact to traffic flow and public safety along public highway from mining-related traffic would be "moderate with potential to become a significant impact should be negotiable." Perhaps the last sentence of the above conclusions could be changed to put things more in perspective. Example: "Impacts should be negligible over the other 40 plus or minus years concluded in our definition of short-term and over the long term." R- 7

It is interesting to speculate what the actual difference exists in traffic flow impacts. Road maintenance requirements and public safety considerations, etc., between two to three years of legally loaded coal truck hauling at a rate of 192 trips per day and other extraordinary heavy truck hauling that continues to occur in our region such as 100 plus logging trucks trips per day on County roads and highways for three to five months per year or until all the Bull Mountain timber resources are exhausted. Forty-plus grain truck trips per day through harvest periods, 50-plus livestock trips per day during fall and spring, 100 truck trips associated with every highway construction project over the past five years. R- 8

Thank you for the opportunity to provide comments about this DEIS. I encourage adoption of Alternative #1 without any excessive stipulations. A significant amount of tax revenue that this project can provide to the road fund would be greatly helped.

Larry Lekse: My name is Larry Lekse. I'm President of the Musselshell Valley Chamber of Commerce. I have a letter here for Mr. Mike DaSilva that I'll read. **Verbatim testimony is presented in Letter 24**

Hershel Robbins: I here representing myself, I'm Hershel Robbins. I'm a past County Commissioner and State Representative from Roundup. **Verbatim testimony is presented in Letter 23.**

Jeanne Charter: I'm Jeanne Charter. I'm testifying on behalf of myself and my husband. We flipped for it and I won. **Verbatim testimony is presented in Letter 22.**

Larry Deschemaeker: I'm Larry Deschemaeker, Board President for Fergus Electric Co-op. I'm here representing Fergus Electric Co-op's Board of Directors and wish to speak in support of the Meridian Bull Mountain Mine No. I. **Verbatim testimony is presented in Letter 5**

Corky McKown: As a resident who lives at the corner of PM Mine and Old Divide Road which is up Fattig Creek. We feel that the impact statement was very inadequate on the dust control problems for the immediate residents there. We feel it should be addressed on how the trucks are going to be running every 15 minutes - is that correct? It can be stated then also on how often that road will be watered to control the dust or paved. If the test pit was any indication on how it was going to be controlled, it wasn't done very well. Once they would water it down, the grader would come by and grade it and then you couldn't go outside. R- 9

Water is also a concern for the residents, not just me but other residents around there on the truck traffic route. So I would like it if the final impact statement take a little more concern with the immediate direct dust impacts for health problems because you can not stay outside with double 10 trucks running. So that is a very main concern of mine.

Don Golder: I'm Don Golder. Livestock rancher in the Bull Hills. The last two nights - in Huntley the issue of coal hauling into Roundup. So I would like to reiterate that tonight for the benefit of the Roundup people. First of all I would like to read to you from a document analyzing a temporary loadout facility, dated January 31, 1992 with review team of the Robert Oschner, Mike Duval and Ann Fossy, entitled "Draft Bull Mountain Mine No. 1." - I'll have to turn this in. Thank you. (Refer to Letter 31.)

John Simic: My name is John Simic and it looks like I'm going to be the closest neighbor to the mine once it is open. My house is located right between Fattig Creek Road and PM Road. Basically I'm in favor of the mine and everything that comes with it, but I have a very deep concern about myself too because I'm sandwiched between those dirt roads and if it is any indication of what it is going to be like when the mine opens, I'm telling you, when the test was operating it was completely unlivable for me there because of dust. All I would like to say is let's be good neighbors so I can live there too. We would appreciate the control, or pavement, or water. This is basically what I have to say. R-10

Bruce Hoiland: My name is Bruce Hoiland. I'm a businessman, a taxpayer and a past little league coach in Roundup. **Verbatim testimony is presented in Letter 21.**

Gary Thomas: My name is Gary Thomas. I'm Commissioner of Public Works for the City of Roundup. On the section on public water supplies the draft EIS states the water supply and pumping capability and storage capacity of Roundup Municipal Water System are adequate for the present population. According to a water system engineering report for the City of Roundup dated March 1980, the supply pumping distribution and reservoir capacities are sufficient for a population of 3,400 people. The 1990 census puts our population at 1806. Therefore our water system is not only adequate for the present population but also adequate for any increases of population projected by the EIS. R-11

In the Draft EIS it states that if the mine becomes a reality, the benefits of increased tax revenues are "minor and beneficial." The draft also states that, if there is no mine, the impacts of lost benefits are "moderate to major." Another section states that direct tax revenues from the proposed mine and related facilities should average $9 million per year in 1989 alone. That's $270 million over the life-of-mine. So if we get the $9 million per year throughout the State, it is a "minor" benefit, but if we don't get the revenue, it's a "moderate to major" loss. To me these two sections appear to contradict themselves. I believe the conclusion to the section on impacts to Public Sector Fiscal Conditions in Chapter 4 should be changed to "major and beneficial." R-12

I read the entire DEIS and, with the mitigation measures that are planned, I think Meridian's proposal should be approved without unreasonable conditions and let's get on with the project.

Monty Sealey: My name is Monty Sealey and I'm a citizen of Roundup. I promised my wife I would not get up here an make any comments tonight because everybody wants to go home. But I got a call this afternoon from a representative of the Yellowstone County Commissioners and they send their apologies up the staff of DSL that they could not be here in attendance tonight. They have mailed comments to you but for the benefits of the public here tonight, I'll read the comments.

> We have reviewed the DEIS for Meridian Minerals Company Bull Mountains Mine No. I and we are in general consensus with the socioeconomic impact.
>
> However, we feel that the employment of people in a rural primary industry such as the Meridian Mine needs to be more appreciated. Your EIS merely refers to it as a "minor impact" in Table 4-5, having only negligible to moderate impact. The employment of upwards of 300 people in a basic industry of Montana merits more consideration. Please consider this in your final EIS. Thank you. R-13

One other point from my standpoint, believe me you have written comments coming.

T.J. Mueller: I'm from Huntley. I have a question on the permit for Meridian. That will be issued for five years? R-14

Gary Amestoy: By law any permit that we issue is a five-year renewable permit but it is not automatically renewable.

T.J. Mueller: Will the temporary loadout in Huntley is supposedly for two years, is that right?

Gary Amestoy: The document ranges somewhere between 24-36 months.

T.J. Mueller: If Huntley is selected for the loadout, is it possible that it could be used for the full five years or beyond that?

Gary Amestoy: We have had a considerable number of comments regarding just that question, and right now that is not the plan - the plan is for no more than 24-36 months and that includes construction, reclamation, and everything.

T.J. Muller: But could it be used for that amount of time?

Gary Amestoy: I can't answer that right now, because we don't have an answer. Maybe Mr. Casey could shed more light on that. But that isn't what we are evaluating, any more than that.

T.J. Mueller: Then I would like to see the railroad put back into Roundup and have the loadout closer to the mine. I think that would be more beneficial for everybody. R-15

There is a difference between choosing to live next to a pile coal and being forced to live next to it.

Steve Erb: My name is Steve Erb and I'm also from Huntley. I represent the Huntley Community Club. I'm not going to speak on behalf of the Yellowstone Valley Co-op but I am employed there and am a member of the Co-op. I do appreciate your listening to our concerns in Huntley. On the way up here tonight I found three more things in the document that I would like to relay to you.

Chapter IV-45. The estimates of increased maintenance and operations, the cost of the two highways was made available by the Montana Department of Transportation and the document forwarded to the Montana Department of State Lands, dated 12/23/91. R-16

Chapter III-25. We would like to see highway 12 mentioned as a hauling route because no Federal aid is any longer available. Also in July of 1993 Reconstruction Trust Fund monies will also terminate unless State Legislature reinstates the Reconstruction Trust Fund. R-17

Chapter III, Section 5, which is also in the letter that the Department of Transportation sent to DSL, there are 10 different listings for school bus interaction with coal trucks. I believe there are some major contradictions in the information from the DEIS and what was in that letter. R-18

If you would allow me to, I won't take a lot of time, but I would like to express my personal interest as a resident of Huntley to the residents of Roundup. We are not opposed to the development of this mine. We are very, very concerned about what the loadout is going to do to our community. What the increased truck traffic to do Highway 312 and Heath Street. Like I say, I'm a journey lineman and I make a good wage and I know what it means to have a good job, especially a good job with benefits. We have voiced many, many concerns. Some may have been minor concerns and some were major. We felt they were all valid. The Huntley Community Club consists of mostly younger people, 35 years old or less. We aren't professional speakers. We aren't Legislators. We aren't attorneys. We're just young people concerned about our community. I've got a real good suggestion for you. If you want jobs in Roundup Montana, I suggest you take the 24 jobs that they are asking for the loadout in Huntley and move them right up here. You've heard a comment made on putting a conveyor belt system and the loadout right here in Roundup. That's 24 more jobs waiting for you in Huntley. I would encourage you to do that. I'm really surprised - the problem with this system and the way it is set right now is that all that has been submitted to State Lands for consideration is the development of this mine and the 4-year mine plan and the Huntley site is the loadout. Boy, if we were in a situation where we needed some more jobs, I think I would have gone to Meridian and asked them to proposed the loadout for Roundup.

I know this is off what you wanted us to say, but I know there have been some bones of contention about it. We have not tried to hold up the project or anything else. We've just asked what we feel are legitimate concerns, and we've had a chance to voice them, and we want to thank State Lands for providing us that opportunity. It is a complicated process and, believe me, we've spent 2-1/2 years trying to follow it and who we needed to talk to and what we needed to address. Thank you very much.

Lavonne Rook: I'm Lavonne Rook and I work for Musselshell County Human Services. I keep hearing everybody saying about how they feel that this report says quite enough about the impact as far as financial. I've worked for the Human Services in Roundup since January 1988, five years. My caseload has probably doubled - you don't think we need jobs here. We really do! It is going to be a big impact if the mine goes through. I have people coming in every day that I ask why are you coming to Roundup, Montana, and they say: "We heard a mine is going in and we want jobs." Whether they go to work or not, I don't know, but it's going to be a very big impact if this coal mine goes through. Thank you. R-19

Darrel Brewer: I'm Darrel Brewer, Chairman of the Musselshell County Commissioners. I gave my statement in Billings last night so you don't have to listen to it tonight. I would just like to thank all the people from our community and surrounding area for showing up at when we need you and also thank the State Lands Department for a job well done. Thank you.

Meeting adjourned at 9:00 p.m.

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4. RESPONSES TO COMMENTS

2-1 It was beyond the scope of the EIS to determine how many new employees would be moving to the area to work in the health services field or how many spouses of these workers would be willing to work in an underground coal mine. The number of workers projected to move to the Roundup area was based on the expected number of workers to be hired locally, the proximity of the community to the mine, and the amount of services available in each area.

3-1 See Chapter V, Section B. Public Participation, for discussion of public meetings that were held in Huntley. The Huntley Community Club sponsored 3 public meetings in Huntley, attended by 82, 53, and 58 people, respectively. Montana DSL personnel were also in attendance at these meetings. In addition, Montana DSL sent brochures to all addresses in the Huntley area describing the proposed Project and inviting public participation. Concerns expressed during these meetings, and as a result of the mailing, were included in the scope of the EIS analysis, where appropriate.

4-1 The comment period for the draft EIS was 35 days, 5 days longer than the rules require. An extension of the comment period would have caused undue delay in production of the final EIS.

4-2 The specifics of the land use agreement would be unknown until the agreement was negotiated. Meridian has applied for easements to use State parcels. The decision to grant a land use agreement cannot be made until after publication of the final EIS.

4-3 See Chapter III, Section K., Capacity and Accident History. Traffic accident increases were based on information provided by the Montana Department of Transportation. Use of the conditional tense, (e.g. could), is made throughout the EIS because there isn't certainty that the mine would be permitted. There is also no certainty that additional accidents would occur. The coal hauling trucks will only increase overall truck traffic about 10 percent. See Chapter IV, Section 9., impact topic a. There is no evidence that trucks hauling coal are more dangerous to school buses than other commercial trucks.

4-4 See revised text, Chapter III, Section J., Ambulance Services, for discussion of Worden Ambulance Service and Shepherd Quick Response Unit.

4-5 See response to comment 4-1.

4-6 See response to comment 4-1.

5-1 Economic conditions due to secondary employment and income were addressed in the socioeconomic section of the EIS.

6-1 The only tax benefits available to Huntley would be from taxes received by Yellowstone County and expended in Huntley. See Chapter IV, Section 11., impact topic g., for discussion of impacts from the operation of the proposed loadout in Huntley. The Agency concludes that impacts to social well-being in the area would be moderate over the short term. Impacts from the Huntley loadout would last no longer than 3 years; from construction, 24 consecutive months of operation, and reclamation.

6-2 The draft EIS acknowledges that the community of Huntley would experience temporary noise impacts during the 3 years that the loadout is constructed, used, and reclaimed. See new permit conditions in Chapter II, Section 1. Alternative 1.: Alternative of the Applicant's Proposal, With Conditions.

6-3 Comment noted and acknowledged. Thank you.

6-4 These figures are an estimate of how sound from a typical operation could attenuate at the stated distance from the source. Operations using different equipment emit differing mean noise levels with varying effects. Acoustical attenuation factors affecting noise levels include, but are not limited to: topography, physical, barriers, absorptive or reflective properties of intervening surfaces, and other ambient environmental factors. Any interruption of sound would create an "acoustic shadow zone" resulting in reduction of noise levels. Since there would be different equipment and machinery used at the mine site and the physical environment at the mine site is different, it would be difficult to accurately compare the level of noise attenuation over distance at the two locations.

6-5 Chapter III, Section 2. Existing Noise Environment, does not attempt to predict rail traffic noise by extrapolating from highway traffic noise. Noise studies cannot be conducted without the proposed activity being present. Noise levels must therefore be approximated.

6-6 See response to comment 6-4.

6-7 Chapter IV, Section A. Assumptions for Alternative 1, defines short- and long-term impacts. See new permit conditions in Chapter II, Section 1. Alternative 1.: Alternative of the Applicant's Proposal, With Conditions.

6-8 Montana DSL looked at a number of alternative sites. The Huntley site is a commercial/industrial site. Many of the other sites would require disturbance of undisturbed land. None of the other alternative sites is environmentally superior to the Huntley site. See revised text, Chapter II, Section B. Other Alternatives Considered.

6-9 See response to comment 6-8.

6-10 See response to comment 6-8.

6-11 Wind data from the nearest National Weather Service station are often used for air quality analyses such as dispersion modeling. Multiple years of data are available and are provided in a format compatible with the computer analyses which are done. As a condition of the Yellowstone County air quality permit, on-site wind monitoring would be required during the operational life of the Huntley facility.

6-12 The town well and Strand well are both in excess of 1,000 feet from the loadout well and closer to the Yellowstone River by the same distance. Both wells are significantly deeper than the loadout well. Since the town and Strand wells are neither in locations nor installed in a manner conducive to monitoring drawdowns, potential impacts have been based on aquifer material characteristics instead.

6-13 These noise impacts are addressed in Chapter IV, Section 10., impact topic d. The Huntley loadout would be constructed, operated for 2 years, and subsequently reclaimed.

6-14 The general impacts to roads in the Huntley area are discussed in Chapter IV, Section 9. Northern Avenue would be included in those more general discussions. See Chapter II, Section 1., new Condition 7.

6-15 Quality-of-life telephone surveys were conducted by Economic Consultants Northwest (1991) with 160 Huntley residents concerning their perceptions of social conditions in their respective area. Systematic sampling techniques were used to select a sample. The interviewer did not ask the respondent's name; therefore, no list of contacts is available. On-site, unstructured interviews also were conducted in 1991 with Huntley residents.

See Chapter III, Section J., Social Well-being, for discussion on results of the survey. Ninety percent of the Huntley residents were not surveyed; rather, 92 percent of the respondents (i.e., 160 interviewed persons) indicated that they were aware that coal was hauled to the loadout facility.

6-16 This comment is beyond the scope of the EIS. Ownership considerations are not issues for analysis in the EIS.

7-1 Musselshell County would have the responsibility of maintaining this road in a usable condition. See Letter 12.

7-2 See response to comment 7-1.

7-3 See response to comment 7-1.

7-4 The PM mine would cease to exist if the Project were built. The PM mine road would be closed to accommodate the rail car loading facility at the mine.

7-5 See response to comment 7-1. The physical and revenue impacts associated with Old Divide Road are recognized in the text in Chapter IV in sections on transportation and fiscal impacts. See Letter 12.

7-6 Road maintenance is the responsibility of Musselshell County.

7-7 Noted and acknowledged. Thank you.

7-8 Noted and acknowledged. It is acknowledged that residential development could occur along Highway 87, however the density and timeframe of this development is unknown.

7-9 The cost of a 10-foot wide crosswalk built to current standards is roughly estimated at $175,000. Remainder of comment is noted and acknowledged.

7-10 Noted and acknowledged. Thank you.

7-11 The estimated cost of replacing Highway 312, the expected revenues generated by the Project and accruing to Musselshell County for increased County costs including road maintenance, and the increased safety hazard on Highway 312 are all discussed in the text. See Chapter VI, Section 11., impact topic b.; Section 9., impact topic a.; and Letter 57.

7-12 Noted and acknowledged. Thank you.

7-13 This comment is beyond the scope of the EIS and outside the scope of analysis under MEPA. Business decisions about contractor arrangements would be made by Meridian.

7-14 Under Montana law, liability for injury or death attaches to a party whose negligence or intentional conduct caused the injury. The State has waived sovereign immunity for its negligent acts up to certain monetary limits.

7-15 Montana DSL would allow Meridian to operate the Huntley loadout for 24 consecutive months. However, in the future, Meridian could request an extension of this timeframe. In responding to such a request, Montana DSL would have to provide another opportunity for public review and input as part of an impact assessment for the continuation of hauling coal to, and loading it out at, Huntley.

8-1 Comment, assumptions, and calculations noted. See response to comment 6-8.

9-1 Expected impacts on total employment and income in the total study area would be less than 1 percent. Impacts on fiscal conditions for the total study area are also expected to be minor and beneficial; however, impacts to fiscal conditions of the individual local governments of Musselshell County and associated school districts would, of course, be moderate to major and beneficial. Similarly, the loss of potential jobs refers to impacts on the entire study area, not necessarily Roundup or Musselshell County. The text of the EIS has been revised to reflect impacts on local areas rather than the total study area.

10-1 Analysis of alternate mine plans included a number of factors including specific consideration of geotechnical characteristics of the overburden and existing fracture patterns, longwall mining methods versus room-and-pillar mining, different orientations of longwall panels and different locations of mains for access, construction, and ventilation. Consideration of location of specific features such as overlying springs and stream channels, and the need for controlled subsidence, was combined with the best coal recovery scenario to arrive at the planned mine. Support facilities and mine face-up facilities require certain terrain and stability, not found in alternate locations. The existing PM underground mine provides face-up and support facilities which can be incorporated without new disturbance in a different location. Some mine development requirements are inflexible, such as location of mains to provide adequate ventilation, equipment haulage, and material handling systems.

10-2 This EIS has been prepared in accordance with MEPA.

10-3 See response to comment 10-1. The preferred alternative is not required to be identified in a draft EIS. Please see revised text Chapter II, Section 1.

10-4 Appropriate mitigation measures are included in Appendix A and in Chapter II, Section 1., new conditions.

10-5 See response to comment 6-8.

10-6 Quality-of-life telephone surveys were conducted by Economic Consultants Northwest (1991) with 160 Huntley residents concerning their perceptions of social conditions in their respective area. Seventy-two percent of the respondents described the local economy as either growing or stable, while 28 percent described the economy as depressed.

Those interviewed in the social survey did not identify specific segments of the population, such as the elderly, as being disproportionately stressed or otherwise affected differently from the population as a whole. The Project, such as the loadout facility, could cause stress and anxiety in some segments of the population opposed to the Project or who would be affected by increased noise, dust, and traffic.

10-7 "Cultural modifications" refer to any alteration in the viewshed due to human activity, including structures, roads, and signs. The remainder of the comment is noted.

10-8 Impacts to public sector fiscal conditions include all government expenditures and revenues. The impact of increased highway maintenance expenditures would be mitigated by a doubling of the present County maintenance budget.

10-9 This EIS analyzes the mine plan and its mitigation plan. As a result of the draft EIS review process, additional conditions have been added to the approval of Alternative 1. All major revisions to an existing permit require public notice, complete technical analysis, and MEPA compliance. Changes to the mine plan and its incorporated mitigation plan are beyond the scope of analysis for the EIS. See responses to comments 6-8 and 10-1.

11-1 Noted and acknowledged. Thank you.

12-1 Noted and acknowledged. Thank you.

13-1 See response to 6-8.

13-2 See Chapter II, Section 1., new condition 7. See Letter 57. Any licensed vehicle in compliance with traffic and road limit laws has the right to travel on State roadways. Remainder of comment noted. See Appendix A, Section E., Coal Transportation, for discussion of trailer protection. Trucks would be required to have tarps over the coal. See Chapter 11, Section 1., New Conditions.

13-3 Concurrence with Department of Highways recommendation noted.

14-1 See response to comment 6-12.

14-2 The effect of the loadout well on the District's proposed well could not be assessed until the site selection and depth of the new well were formalized. However, if the new well were located in the vicinity and at the depth of the existing water supply well, no adverse effects would be predicted as a result of pumping the loadout well.

14-3 See response to comment 6-8.

14-4 See revised text, Chapter II, Section 1., new Condition 7.

14-5 See responses to comments 10-1 and 61-1.

14-6 See response to comment 10-1.

14-7 See responses to comments 6-8 and 10-1.

14-8 See response to comment 7-14.

18-1 See response to comment 14-3.

18-2 See responses to comments 6-8 and 10-1.

18-3 See response to comment 6-11.

18-4 The results of the social survey were used to describe existing conditions and project potential impacts. The results of the survey are available from Montana DSL.

18-5 See Letter 57 from the Montana Department of Transportation.

21-1 See response to comment 9-1.

22-1 See revised text, Chapter III, Section E., Ground Water Resources, for discussion of spring ranking and importance to ranchers. Noted and acknowledged. Thank you.

22-2 See response to comment 22-1.

22-3 These resources have not been documented and the locations may be outside of the life-of-mine area.

22-4 Impacts to water resources cannot be accurately predicted either as to severity or location at this time. Meridian has committed to mitigate impacts that do occur. Detailed mitigation plans are included in the permit application package and include quick response actions to impacts. Significant sources are identified in Table E-8.

22-5 See text, Chapter IV, Section 3., impact topic a., for discussion of impacts to steep slopes and natural processes.

22-6 Montana DSL protects the public interest by establishing bonds in the amount sufficient to accomplish mitigation and reclamation. Pursuant to ARM 26.4.404(3), Montana DSL must give public notice of a determination that an application is acceptable. The final permit terms and terms of the bond and trust fund would be available at that time. This rule gives the public the right to file written objections or request an informal conference, or both.

24-1 The assumption was based on the number of workers available in Musselshell County and Yellowstone County. The figures used were not quotas and Meridian certainly could hire more workers from the Roundup area than was forecasted in the EIS. See response to comment 9-1.

24-2 Local hire ratios were presented in the assumptions at the beginning of Chapter IV. In addition, methodology and the basis for assumptions will be on file at, and available from, the Montana DSL.

24-3 The informal survey by non-EIS preparers referred to in the comment is not an acceptable basis for projecting economic impacts in the EIS.

24-4 Comment noted. See response to comment 9-1.

24-5 Noted and acknowledged. Thank you.

25-1 See response to comment 22-6.

25-2 See response to 22-4. See revised Table III-3, Chapter III.

25-3 See responses to comments 22-5 and 22-6.

25-4 See response to comment 10-1.

25-5 See response to comment 10-1.

25-6 The rules require public notice and opportunity to comment for major revisions to plans within existing permits. All application materials are available for public review at the Montana DSL offices listed in Chapter 1. For public notice and comment procedures, see response to comment

22-6.

27-1 Noted and acknowledged. Thank you.

28-1 See response to comment 9-1.

29-1 General fund revenues used in the EIS include funds from all sources.

31-1 See response to comment 6-8.

32-1 See Chapter IV, Section 6., impact topic a., for discussion of potential subsidence impacts.

32-2 Mining-induced fracturing would occur before backfilling could be completed. Changes in the surrounding rock mass would exist with or without backfilling and therefore, backfilling would not be expected to reduce potential hydrologic impacts.

32-3 Referenced drawings are not to scale. Guzzler systems are designed primarily to serve wildlife. See Appendix A, Section F., Hydrologic Mitigation, for discussion of guzzlers.

32-4 See response to comment 32-3. Calculations noted.

33-1 Comment noted. See Appendix A, Section A., Main Facilities Buildings, for discussion of emergency facilities.

34-1 Within the original rail corridor, a Tetra Tech, Inc. survey identified 12 prehistoric and 22 historic sites. One locality had both a prehistoric and historic component so the total number of sites was reported by Tetra Tech, Inc. as 33. All 12 prehistoric sites and 15 of the 22 historic sites (27 sites in all), were recommended as potentially eligible for the National Register of Historic Places (NRHP).

Just under 20 miles of rail corridor realignment were later surveyed by Metcalf Associates (Pool 1991). These realignments left 25 of the 33 total sites identified by Tetra Tech, Inc. within the revised corridor (direct impact area), 20 of them potentially eligible. This left 8 sites, 7 of which were deemed potentially eligible, outside of the new corridor.

In addition, the Pool survey identified 7 new sites (2 historic and 5 prehistoric) within the revised corridor, 5 of which were recommended as NRHP eligible. This brought the total number of sites within the corridor to 32, with 25 of these sites recommended as potentially eligible for the NRHP.

34-2 The survey corridor for the railway was about 150 meters wide, not 150 feet. Local variances in right-of-way width were due to construction considerations (e.g., a wider corridor in rough terrain to accommodate cut-and-fill work).

With regards to adequacy of the survey width for the rail corridor, the standard employed for conventional prehistoric and historic resources was based on potential for direct impacts due to construction or operation. The same standard has been applied to coal-mining projects in Montana, in consultation with the State Historic Preservation Office (SHPO). The SHPO now suggests that a permit applicant consult with their office prior to undertaking a cultural resource project to determine the adequacy of an audio-visual impact survey corridor.

With respect to traditional Native American resources, the archeological surveys carried out by both Tetra Tech, Inc. and Metcalf Associates were not intended to define traditional or sacred sites, except as incidental to the primary purpose. Evaluation of traditional Native American resources is being done as part of the Native American consultation process, currently being carried out by Ethnoscience of Billings, Montana. This consultation is not restricted to the physical limits of the proposed rail corridor.

34-3 Consultation with Native American groups with concerns about the Project area, per the provisions of both the National Historic Preservation Act and the American Indian Religious Freedom Act, was initiated by Tetra Tech, Inc. and is currently underway by Ethnoscience of Billings, Montana. Members of some Native American groups have visited the Project area and have expressed some concern over particular sites believed to be of a sacred or spiritual nature.

The final report on traditional Native American consultation is now being prepared by Ethnoscience. The nature of, expected impacts to, and potential mitigation treatments of traditional sites and values would be addressed after completion of the final report (see Chapter II, Section 1., conditions 1, 2, and 3).

34-4 The proposed mine area has been the subject of extensive correspondence between Montana DSL and the SHPO. Montana DSL requested site eligibility review by the SHPO in the spring of 1992, and has subsequently forwarded its formal recommendations regarding site eligibility and potential mitigation to the SHPO. No response has been received as of this writing.

The 2 cultural resource surveys carried out on the mine area identified a total of 5 sites which were deemed potentially eligible for the NRHP, 4 of which lie within an area of known direct impact. These were recommended for further testing to resolve eligibility. After testing in 1992, the 4 sites have been recommended as ineligible. This would, assuming SHPO concurrence, complete the Section 106 requirements for the area of active disturbance.

As noted in the text, there is a potential for indirect impacts to undiscovered sites due to subsidence-induced slope failures in steep-slope areas. These failures are extremely difficult to predict with accuracy. Meridian would be required to upgrade all areas with greater than 25 percent slope to the Class III inventory level as mining progressed. Sites thus identified would be evaluated and mitigated in advance of mining, both in consultation with the SHPO. The inventory requirement may be modified by Montana DSL, based on actual observed ground behavior.

The 230+ site figure was extrapolated from site density recorded for the 690-acre Class III inventory. Since slope failure impacts would be limited to the steeper hillsides, Montana DSL believes that the potential impact to archeological sites would be significantly less, and limited primarily to pictograph panels and rock shelter sites. The procedures outlined in the preceding paragraph are designed to survey, identify, and evaluate such impacts in advance, per the provisions of 36CFR800.

36-1 See response to comment 9-1.

38-1 See Appendix A, Section 3., Coal Transportation, and response to comment R-9.

38-2 See Chapter IV, Section 6., impact topic c., for discussion of ground water impacts.

38-3 Noted and acknowledged. Thank you.

38-4 In Chapter IV, Section 10. impact topic a., it is noted that during construction, noise levels would range from about 60 to 51 dBA at 1,000 and 4,500 feet, respectively. During operation, noise levels are estimated at 40 dBA at 4,500 feet from the mine site. These noise levels are not commensurate with living next to a highway. Please refer to Table III-5.

38-5 Noted and acknowledged. Thank you.

38-6 Noted and acknowledged. Thank you.

38-7 Impacts to property values are not the type of socioeconomic impacts that have been required to be evaluated in EISs. In Northern Cheyenne Tribe v. Hodel, the court listed the socioeconomic factors that must be considered as:

> ". . . social disruption caused by increased numbers of miners, their families, and others who will provide services, the increased demand for schools, housing, water and sewer services, and the increased strain on local governments."

38-8 Impacts to property values are not the type of socioeconomic impacts that have been required to be evaluated in EISs. Montana DSL has no authority to determine the amount of decrease in property values and require the applicant to make payments to property owners. In Northern Cheyenne Tribe v. Hodel, the court listed the socioeconomic factors that must be considered as:

> ". . . social disruption caused by increased numbers of miners, their families, and others who will provide services, the increased demand for schools, housing, water and sewer services, and the increased strain on local governments."

39-1 See response to comment 4-1.

39-2 See Chapter V, Section B., Public Participation, for discussion on public meetings in Huntley.

39-3 Noted and acknowledged. Thank you.

39-4 See response to comment 4-1.

39-5 This EIS has been prepared in accordance with the Montana Environmental Policy Act (MEPA). See responses to comments 6-8 and 10-1.

40-1 Inspection reports maintained by the Montana Department of Health and Environmental Sciences (DHES), Water Quality Bureau, were reviewed, and condition and capacity of the Huntley water supply system were discussed with appropriate DHES staff. This was cited in Chapter III, Section J., Public Water Supply, Wastewater Treatment, and Solid Waste.

40-2 See responses to comments 6-12 and 14-2.

40-3 If the same streets are involved in the construction project and the coal-hauling route, impacts discussed in Chapter IV, Section 9., impact topic a., would be amplified.

40-4 Noted and acknowledged. Thank you.

40-5 Comment noted. See response to comment 4-1.

41-1 See revised text in Chapters II and IV appropriate to comment 41-3. Remainder of comment acknowledged.

41-2 See response to comment 41-1.

41-3 See response to comment 41-1.

42-1 The data reported are from a baseline air monitoring program done by Chrome Corporation of America at a site located about 4 miles east-northeast of Huntley in 1989-90. These were considered the most representative data available for Huntley. It is correct that no air monitoring was done at the loadout site or in the immediate Huntley community.

42-2 The 12-ton per year emission estimate is calculated using factors developed by EPA to estimate the potential emissions of an air pollution source. It is not related to baseline air quality monitoring. In order for Prevention of Significant Deterioration (PSD) regulations to apply, estimated emissions would have to be 250 tons per year.

42-3 There is some difference of opinion as to the severity of air quality conditions related to the 1990 operations at the loadout site. In any event, the air quality permit process is designed to prevent the type of situation described and to protect public health.

42-4 The water spray system would require different technology for operation during sub-freezing temperature than would be required for operation during temperatures above freezing.

42-5 Noted and acknowledged. Thank you. See new permit conditions in Chapter II, Section 1. Alternative 1.: Alternative of the Applicant's Proposal, With Conditions.

42-6 Noise impacts in Huntley due to construction and operation of the loadout are portrayed as minor to moderate over the short term and negligible over the long term. The Agency does not predict that air quality impacts would exceed any applicable air quality standard.

42-7 The Agency's determination that the impact to recreation opportunities would be minor with respect to air quality is based on the fact that the increase in particulate matter in the air resulting from Meridian's proposed operation would be minimal in comparison with existing background levels and current air pollution sources such as vehicle traffic, home heating, and agricultural activities.

42-8 Noted and amended. Thank you.

42-9 Noted and acknowledged. See new permit conditions in Chapter II, Section 1. Alternative 1.: Alternative of the Applicant's Proposal, With Conditions.

42-10 See response to comment 10-1.

43-1 Noted and acknowledged. Thank you.

43-2 Noted and acknowledged. Thank you.

44-1 See responses to comments 6-8 and 38-8.

44-2 Comment noted. See Appendix A, Section D., The Bull Mountains Rail Spur, for discussion of the rail spur, and Section F., Reclamation Plan, for reclamation discussion.

47-1 See response to comment 9-1.

49-1 An interdisciplinary team applied the criteria using the available technical characteristics of each spring. The subsequent scores and relative ranking are presented in a revised table in Chapter III, Table III-3, and Appendix E, Table E-8. Comment noted.

49-2 More recent data are acknowledged, although the wintering area mentioned (confluence of Fattig Creek and the Musselshell River) is a considerable distance from the proposed mine.

49-3 References to the "western portion of the area" apply to the west half of the life-of-mine area and the rail spur right-of-way.

49-4 Noted and amended. Thank you.

49-5 There is little factual information available on the value of recreation to either Musselshell County or Yellowstone County. No doubt there is income spent and jobs created, but there are not reportable data for either of these economic variables as they relate to recreation.

49-6 Some displacement would occur. The distances involved would vary depending upon habitat influences. However, no data are available as to whether these animals would be more or less available to the hunting public (i.e., whether they would end up on public or private land).

49-7 As stated, the comparisons obtained from monitoring would direct corrective measures during the mine life.

49-8 This comment is beyond the scope of the EIS.

49-9 See response to comment 22-4. Remainder of comment noted. Thank you.

49-10 There is a remnant population of sage grouse in the area, most of which are probably maintained in a few islands of sagebrush habitat to the north of the right-of-way. The proposed corridor does follow along the east and south boundary of S13 T4N R24E. The NE 1/4 of this section is cultivated, the remainder is sagebrush-grassland. Thus sage grouse habitat along one-half mile of the east boundary and 1 mile along the south boundary would be disrupted for the width of the right-of-way.

49-11 The degree of attraction for the newly-seeded railway corridor by deer and elk would depend largely on adjacent habitat (i.e., if good cover with little food is adjacent, the corridor, ungrazed by domestic livestock, would probably be a benefit to wild ungulates.) Train speed along the corridor is not likely to be a detrimental factor.

49-12 See text, Appendix A, Section F., Wildlife Mitigation.

49-13 Noted and acknowledged. See response to comment 49-16.

49-14 Noted and acknowledged. Thank you.

49-15 Noted and acknowledged. Thank you.

49-16 Concerns for mitigative measures or lack of same expressed in 49-13 through -16 are very real but beyond the scope of the EIS. The suggestion to place conservation easements on existing "undisturbed" parcels of land is recognized as a positive effort but is one which is usually left to the initiative of the private landowner.

51-1 The rail spur right-of-way is not a part of Meridian's permit application package and does not require a permit from Montana DSL. However, under 7-22-2152(2) and (3), MCA, Meridian must submit and receive approval of a weed control plan for the rail spur. On the permit area, Montana DSL rules require the use of certified weed-free seed mixes, ARM 26.4.716(3) and (4), and certified weed-free mulches, if available, under the requirement to use the best technology currently available, ARM 26.4.716 (4). The steam cleaning of machinery has been included as a condition (see revised text, Chapter II, Section 1.). The permit reclamation bond approved by Montana DSL may only be released after verification of noxious weed-free status (10 years post reclamation) on all permitted acreage. Before bond release, Montana DSL must give public notice of proposed bond release to each county in which the permit area is located.

53-1 See text, Chapter IV, Section 6. for discussion of replacement water supplies for landowners losing water as a result of mining operations.

53-2 Comment noted. See Appendix A, Section F., Reclamation Plan, for discussion of reclamation.

53-3 Noted and acknowledged. Thank you.

53-4 See response to comment to 10-1.

53-5 Noted and acknowledged. Thank you.

55-1 It is anticipated that all water from mine dewatering would be used and none would be discharged. The activity would be monitored and, if discharge occurred, Meridian would have to comply with applicable regulations.

55-2 The potential for 5-foot of drawdown in the upper underburden, as a result of mining related recharge reduction, is estimated at less than 2 miles over the 5-year permit period. Estimates of potential for 1 foot or less of drawdown after 30 years extend less than 4 miles to the north and east and less than 2 miles in other directions. Monitoring during the first 5 years would provide the basis for more reliable, future drawdown estimates.

55-3 PM Draw discharges into Rehder Creek.

55-4 The statement is specific to the suitability of the water for use and is thereby supported by the cited reference. Average total dissolved solids information presented in Chapter III is for the purpose of describing the affected environment. Comparing this information to Thompson (1982) predictions is interesting and useful but comparing estimates of average values barely lends itself to order-of-magnitude precision.

55-5 See response to comment 55-1. The quality of the water from dewatering would not be known prior to the activity.

55-6 See responses to comments 55-1 and 55-5.

55-7 The quality of the water to be discharged is unknown. See response to comment 55-1 and 55-5. There are no known receiving waters.

55-8 Comment noted. The precise quality of the water pumped from the Madison Formation would not be known until the wells were installed. Literature researched showed that water in which TDS ranges from 1,000 mg/l to 100,000 mg/l can be expected from the Madison Formation.

55-9 Water could impact and be impacted by the coal preparation process. See response to comment 55-8.

55-10 Analyzing the rate of release of process water is beyond the scope of the EIS. The rate will not be constant and will rely on business and production decisions made by Meridian.

55-11 There are no receiving surface waters. See text, Chapter IV, Section 6., impact topic a., for discussion of potential impacts.

55-12 See text, Chapter IV, Section 6., impact topics b., and d. for discussion of potential percolation impacts.

55-13 Discharge would be directed by the drains to diversion channels and sedimentation ponds.

55-14 Precise impacts are unknown. Potential impacts are to downgradient water quality. See text, Chapter IV, Section 6., impact topic a. See text, Chapter IV, Section 6., impact topic a., for discussion of Agency conclusion with regard to impact and term of impact.

55-15 Discharge through "weep holes" in sedimentation ponds was not identified as an issue and was not analyzed. Seepage from sedimentation ponds is extremely variable. Monitoring ponds for seepage losses would identify problems that could be solved by corrective measures at a later date.

55-16 Long term projections of drawdown impacts associated with mining indicate that there would be no impacts on the Roundup municipal water source. See response to comment 55-2.

55-17 Noted and acknowledged. Thank you.

55-18 Noted and acknowledged. Thank you.

55-19 Noted and acknowledged. Thank you.

56-1 Noted and amended. Thank you.

56-2 Noted and amended. Thank you.

56-3 Text has been amended to include corrected figures. Thank you.

56-4 Noted and acknowledged. Thank you.

56-5 Noted and acknowledged. Thank you.

56-6 See text, Chapter III, Section E., Ground Water Resources, for discussion of alluvial valley floors. Investigations by Montana DSL indicate that the 24.5-acre area specifically discussed in this comment is upstream of any potential alluvial valley floor design. This is due to a lack of surface water and subirrigation.

56-7 See response to comment 55-8.

56-7a See Figure I-2.

56-8 State land used for the construction and operation of the rail spur would be regulated by a land use agreement between Meridian and the State of Montana. This land use agreement would require the restoration of State land to premining topography and function. Other land would be owned by Meridian and would not be subject to any direct regulatory reclamation criteria, except control of noxious weeds.

56-9 Stockpiles of soil materials would be seeded. See text, Chapter IV, Section 2. Air Quality for discussion of mitigation measures.

56-10 The wells would no longer be needed for production.

56-11 See response to comment 55-8. No discharge of the process water is anticipated.

56-12 Revegetation of the rail spur base grade would occur following removal of ballast. Crested wheatgrass, and intermediate wheatgrass would be planted on non-State owned portions of the former roadbed. The minimal slope gradient of the roadbed would limit erosion potential. Cover crops or straw mulch might be used as needed to protect the seedbed from erosion and to enhance seedling establishment.

56-13 State and County noxious weed laws require landowners to prevent spread of noxious weeds (Montana Department of Agriculture 1991). Meridian proposes that such weeds would be controlled whenever they became a major problem by mowing or application of herbicides. In the case of leafy spurge or spotted knapweed, these controls may not be completely effective. Competition from aggressive seeded species would help limit weed invasion. See responses to 56-12 and 70-19.

56-14 Although difficult to predict the extent, increased losses to wildlife would be encountered due to increased truck and train traffic. Although several species of wildlife, particularly deer and elk, may be attracted to a newly seeded railway corridor, the expected train speed along the route is not great.

56-15 Text has been revised in Chapter IV to replace the word "temporary" with the word "continual".
56-16 There are no buildings in areas of subsidence other than those owned by Meridian.

56-17 The Office of Surface Mining has been included. See revised text, Chapter V, Section A. Consultation and Coordination.

56-18 It is assumed that the PAP is in compliance because the permitting process has not been completed. If the PAP is not in compliance, no permit can be issued.

56-19 Noted and acknowledged. Text has been revised in Appendix A.

56-20 Water distribution systems are an alternative mitigation aimed at delivering excess water and water from newly-developed sources to supplement interrupted sources. Wetlands would not be impacted.

56-21 The source is noted in Chapter VII, References, for further information. It was judged to be too technical for the text.

56-22 Text has been amended to delete references to an application for surface use since this application is not yet on file.

56-23 Noted and amended. Thank you.

56-24 Pages V-1 and V-3 include discussion of threatened and endangered species.

57-1 Noted and acknowledged. Thank you.

57-2 Noted and acknowledged. Thank you.

57-3 Noted and acknowledged. Thank you.

58-1 See responses to comments 6-8, and 10-1.

58-2 See responses to comments 6-8, and 10-1.

58-3 See response to comment 10-1.

58-4 See responses to comments 10-1, 10-2, and 38-8.

58-5 Noted and acknowledged. Thank you.

58-6 Noted and acknowledged. Thank you.

58-7 See responses to comments 6-8 and 10-1. Remainder of comment noted.

58-8 See text, Chapter I, Section C., for discussion of the Federal land use permit.

58-9 See responses to comments 6-8, 10-1, and 10-2.

59-1 See responses to comments 6-8 and 10-1.

60-1 The Agency acknowledges that large-scale disturbance of the landscape or the earth may be in conflict with the belief systems of some Native Americans. The Agency is committed to working with concerned Native Americans to address these potential conflicts, to the extent possible.

60-2 Montana DSL recognizes the importance of pictograph sites in Native American beliefs. Meridian is committed to surveying in detail all areas where slope failure or toppling would be likely to occur, and to identify such sites prior to mining. Mitigation or protection plans for vulnerable sites would be developed in consultation with concerned Native Americans.

60-3 As noted in comments 34-1 through 4, Native American consultation is underway. Some Native Americans have visited the proposed Project site. As sensitive sites were identified, the Agency and Meridian would take both Native American and scientific concerns into account in developing possible mitigation plans.

60-4 See response to comment 60-3.

61-1 See responses to comments 38-8, and 42-3.

61-2 See responses to comments 6-8 and 10-1.

63-1 See responses to comments 6-8 and 10-1.

66-1 See responses to comments 38-8 and 42-3.

66-2 See response to comment 38-8.

68-1 See response to comment 22-5.

68-2 Noted and acknowledged. Thank you.

68-3 See text, Appendix C, Section 4., for discussion of mechanisms of subsidence and sandstones in the overburden.

68-4 Noted and acknowledged. Thank you.

68-5 Noted and acknowledged. Thank you.

68-6 Noted and acknowledged. Thank you.

68-7 See response to comment 22-1.

68-8 The quantity of alluvial ground water flow in the life-of-mine area is unknown and can be expected to be highly variable. See Chapter III, Section E., Ground Water Resources, for discussion of alluvial flow.

68-9 Horizontal drains are one of the alternative mitigations proposed for application at selected sites. See response to comment 22-6.

68-10 See text, Chapter III, Figure III-2 and Chapter IV, Section 6., impact topic a., for discussion of clinker and spring impacts. Further discussion of clinker is beyond the scope of the EIS since it was not identified as an issue for analysis.

68-11 Noted and acknowledged. Thank you.

68-12 Noted and acknowledged. Thank you.

68-13 Noted and acknowledged. Thank you.

68-14 See responses to comments 22-1 and 49-1.

68-15 See response to comment 49-1.

68-16 See text, Chapter III, Section E., Ground Water Resources, and Appendix E, Table E-2 for discussion and listing of ground water quality in the life-of-mine area.

68-17 See responses to comments 22-1 and 49-1.

68-18 The average flow of 0.4 gpm was estimated from measured flows ranging from ponded (little or no flow) to 1.0 gpm.

68-19 See responses to comments 22-1 and 49-1.

68-20 See responses to comments 22-1 and 49-1.

68-21 These resources have not been documented and the location may be outside of the life-of-mine area.

68-22 Comment noted. See responses to comments 22-1 and 49-1.

68-23 See responses to comments 22-1 and 49-1.

68-24 Noted and acknowledged. Thank you.

68-25 Comment noted. See responses to comments 22-1 and 49-1.

68-26 See responses to comments 22-1 and 49-1.

68-27 See responses to comments 22-1 and 49-1.

68-28 Noted and acknowledged. Thank you.

68-29 See responses to comments 22-1 and 49-1.

68-30 Comment noted. See responses to comments 22-1 and 49-1.

68-31 Noted and acknowledged. Thank you.

68-32 See responses to comments 22-1 and 49-1.

68-33 See responses to comments 22-1 and 49-1.

68-34 Comment noted. See responses to comments 22-1 and 49-1.

68-35 Noted and acknowledged. Thank you.

68-36 Comment noted. See responses to comments 22-1 and 49-1.

68-37 Comment noted. See responses to comments 22-1 and 49-1.

68-38 Comment noted. See responses to comments 22-1 and 49-1.

68-39 Comment noted. See responses to comments 22-1 and 49-1.

68-40 Comment noted. See responses to comments 22-1 and 49-1.

68-41 Noted and acknowledged. Thank you.

68-42 Comment noted. See responses to comments 22-1 and 49-1.

68-43 Comment noted. See responses to comments 22-1 and 49-1.

69-1 See responses to comments 6-8 and 10-1.

69-2 See responses to comments 6-8 and 10-1. Please see Letter 57. According to this letter, additional mitigations are being negotiated with the applicant.

69-3 See responses to comments 6-15 and 10-6.

69-4 See responses to comments 6-8 and 10-1.

69-5 Noted and acknowledged. Thank you.

70-1 See response to comment 10-9.

70-2 See response to comment 6-8.

70-3 Meridian currently has a Montana Pollutant Discharge Elimination System (MPDES) permit for its test pit operation and will apply for additional permits as required by law. Please refer to Appendix D, page D-6, for a listing of State agencies regulating water use and quality. Nondegradation standards address maintaining high quality ground water at a high quality with the exception of justifiable change that does not preclude present or anticipated use. See Chapter IV, Section 6., impact topic a.

70-4 See response to comment 49-2. The Montana Department of Fish, Wildlife and Parks has indicated an increase in the number of elk in the Bull Mountains over that reported in 1978. However, the number of permits issued is based not only on the anticipated base herd, but on previous data providing information on the expected percent of successful permit holders.

70-5 Noted and acknowledged. Thank you.

70-6 Water resources are not included in land use considerations. Comment noted and beyond the scope of the EIS. Production cost assumptions would be part of Meridian's business plan.

70-7 Comment noted and acknowledged. Thank you.

70-8 Comment noted. See response to comment 53-1, and text, Chapter IV, Section 6., impact topic a., for mine dewatering and mitigation discussions.

70-9 See text, Chapter IV, Section 6., impact topic a., for discussion of ground water quality impacts and Agency conclusions.

70-10 See Chapter IV, Section 8, impact topic c., for a discussion of the effects of development of wildlife.

70-11 Noted and acknowledged. Thank you.

70-12 Noted and acknowledged. Thank you.

70-13 Noted and acknowledged. Thank you.

70-14 Noted and acknowledged. Thank you.

70-15 Noted and acknowledged. Thank you.

70-16 Noted and acknowledged. Thank you.

70-17 If mining-related activities had any effect on water supplies they would be mitigated.

70-18 Noted and acknowledged. Thank you.

70-19 The comment is correct. Effective control of spotted knapweed and leafy spurge would require an integrated approach including several kinds of treatments. See response to comment 56-13.

70-20 See Appendix A, Section F., Hydrologic Mitigation, for discussion of proposed hydrologic mitigation for potential mining-related subsidence impacts. See response to comment 22-6.

70-21 Noted and acknowledged. Thank you.

70-22 See responses to comments 53-1 and 22-6.

70-23 Noted and acknowledged. Thank you

72-1 The draft EIS was prepared by a multidisciplinary team using an interdisciplinary approach to many issues. The comments of DHES, Water Quality Bureau are answered in responses 55-1 through 55-21.

72-2 While permitting and exemption processes are beyond the scope of the EIS, Meridian must comply with all applicable Federal and State regulations through the appropriate regulatory authorities. Ground water quality data are collected on a quarterly basis within the plan of an overall monitoring program. It is not within the scope of the EIS to anticipate or reject the need for a nondegradation exemption.

72-3 For the purposes of the EIS, springs and seeps result from ground water sources and are therefore defined as ground water resources.

72-4 Permitting and exemption processes are beyond the scope of the EIS. Meridian must comply with all applicable Federal and State regulations through appropriate regulatory authorities.

72-5 See response to comment 72-2.

72-6 The 3,100 TDS (3,100 mg\l, TDS) is a mean value for underground mine spoils water presented in the Thompson (1982) reference. The reference also presents that results are "worst case predictions" and that average values imply no confidence level. See responses to comments 55-1 and 72-4.

72-7 Comment noted. Table E-2 neither presents water quality data as TDS nor references a 3,100 TDS value. The table presents no wells. Springs in the Project area are not used by humans for drinking purposes.

72-8 The 3,100 TDS (3,100 mg/l, TDS) is a mean value for underground mine spoils water presented in the Thompson (1982) reference. The reference also presents that results are "worst case predictions", that average values imply no confidence level, and that postmining ground water would continue to be suitable for livestock uses.

72-9 The mine pool is not planned as a water replacement source. The mine pool would be available as a water source after mining was completed.

72-10 See response to comment 72-4.

72-11 See text, Appendix A, various sections for discussion of water pollution control practices.

72-12 See responses to comments 72-4 and 25-6.

72-13 It is noted in the text that a Prevention of Significant Deterioration (PSD) permit is not required for the Project. That refers to only that specific air quality permit. General air quality permits are required from the Montana Air Quality Bureau for the proposed mine and from the Yellowstone County Air Pollution Control for the proposed loadout. Following analysis and public review, both agencies have issued preliminary determinations to approve the permits.

72-14 The text recognizes that specified discharge permits and exemptions are needed. See response to comment 70-3.

73-1 Considering ground water as a renewable resource or estimating the use value of water in perpetuity is beyond the scope of the EIS. See response to comment 22-6. See text, Appendix D, for discussion of the responsibilities of Montana DSL.

73-2 Noted and acknowledged. Thank you.

73-3 Noted and acknowledged. Thank you.

73-4 See response to comment 10-1.

73-5 See text, Appendix D for discussion of responsibility of ICC and other agencies. See text throughout Section F., Appendix A, for discussion of land reclamation.

73-6 Comment noted. Mining schedules would be based on a business decisions made by Meridian and are beyond the scope of the EIS. By law, any permit issued is a 5-year permit that is not automatically renewable.

75-1 It is acknowledged that there would be traffic impacts to Old Divide Road in the text. See Letter 12.

75-2 Impacts to the integrity and stability of Old Divide Road are recognized in the text. As mentioned, Musselshell County is responsible for maintenance of Old Divide Road. The County would realize an estimated 80 percent increase in tax revenues, some of which could be used to address road maintenance problems. See Chapter IV, Section 11., impact topic b., and Letter 12.

75-3 See response to comment 10-1.

76-1 See Letter 57 from Montana Department of Transportation.

76-2 See response to comment 7-14.

76-3 The Huntley loadout is proposed to be used for 24 consecutive months. See Appendix A, sections A., C., and E., for discussions of the Huntley loadout.

78-1 See responses to comments 6-8, 22-6, and 25-6.

78-2 Noted and acknowledged. Thank you.

78-3 See response to comment R-14.

78-4 Ownerships have been reconfirmed and are correct as shown.

78-5 See revised text, Chapter I, Section B. The Applicant's Proposal.

78-6 The word "could" is not used in discussing the possibility of surface subsidence. The acreage of potential surface disturbance by subsidence and other mining and mitigation activities is the context for the use of the word.

78-7 There are 7,562 surface acres under which coal mining activities would be conducted. It is estimated that 6,170 acres would experience surface disturbance. This estimate includes mains, pillars, and other mine areas over which limited disturbance is predicted.

78-8 See response to comment 78-7.

78-9 See response to comment 78-7.

78-10 These are proposed enhancement areas. Landowner consent has been demonstrated in the permit application.

78-11 Figure A-9, in Appendix A, shows the last longwall panel that would be mined in year 32. Add to that the 3 years for Phase 1 limited mining and the total is 35 years of mining.

78-12 The area is not a coal buffer zone. It is an area of study around the mine plan area.

78-13 Conditions 1, 2, and 3 pertain only to cultural resources. Remainder of comment noted.

78-14 See response to comment 22-5.

78-15 Noted and acknowledged. Thank you.

78-16 Yes. The status of coal leases is beyond the scope of the EIS.

78-17 Meridian has not applied for any State or Federal coal leases outside of the 5-year permit area.

78-18 See responses to comments 6-8 and 10-1.

78-19 See response to comment 7-14.

78-20 See responses to comments 6-8 and 10-1.

78-21 Noted and acknowledged. Thank you.

78-22 Noted and acknowledged. Thank you.

78-23 Noted and acknowledged. Thank you.

78-24 Noted and acknowledged. Thank you.

78-25 Noted and acknowledged. Thank you. As described in the comment, there can be a large amount of variability in wind patterns seasonally and annually as well as based on topographical influences. (See also the response to comment 6-11.) Long-term wind data from the Billings Airport (National Weather Service station) were used for the dispersion modeling for the Project. The Bull Mountains monitoring site was located on a low ridge at the Old Divide Mine. The adequacy of wind data with respect to windmill efficiency has not been evaluated as part of this process. If windmills were used for mitigation, design and storage requirements would have to be identified.

78-26 Only the coal of interest to the proposed Bull Mountains Mine No. 1 is within the scope of the EIS.

78-27 Comment noted. See text, Chapter III, Section E., Ground Water Resources, for discussion of shallow aquifers in the Bull Mountains and the regional ground water gradient relevant to the scope of the EIS.

78-28 This comment is beyond the scope of the EIS. Only ground water resources considered to be at issue with regard to mining and mining-related impacts are within the scope of the EIS.

78-29 See response to comment 78-28.

78-30 See response to comment 78-28.

78-31 Comment noted. Postmining water quality is predicted to be suitable for current uses. Mitigation water would be suitable for current uses.

78-32 Postmining water quality is predicted to be suitable for current uses.

78-33 Noted and acknowledged. Thank you.

78-34 Comment noted. See text, Chapter III, Section E., Ground Water Resources, for discussion of spring and ground water quality. The classification of ground water by Montana Administrative Rule 16.20.1002 is based on specific electrical conductance, not TDS.

78-35 The hydrology discussions do not present conclusions about degradation between classifications. See response to comment 70-3.

78-36 The water quality sampling and analysis program began in 1989, continues at this time, and is planned to continue through proposed mining and reclamation. Some sources are on different sampling schedules than others, but all are monitored on at least a quarterly basis.

78-37 See response to comment 72-8. Mine spoils water quality would not have an immediate and 1:1 qualitative impact on springs or well water quality.

78-38 See text, Chapter IV, Section 6., impact topic b., for discussion of permeability changes in the overburden. See responses to comments 55-1 and 55-5.

78-39 See responses to comments 55-4, 72-8, and 78-37.

78-40 No other chemical tests are known to have been conducted for major ionic constituents in cores from wells drilled in the Bull Mountains.

78-41 Comment noted. The quality of the water discharged from the mine pool prior to stabilization would not be known prior to monitoring. After stabilization, any discharge from the portal would be monitored.

78-42 See text, Appendix E, Table E-2, for definition of Class III ground water. Postmining ground water is expected to remain suitable for wildlife, agricultural, and livestock uses.

78-43 Noted and acknowledged. Thank you.

78-44 Mitigation systems have the potential to provide water for longer durations at sites having seasonal or intermittent discharge.

78-45 See response to comment 22-6. See text, Appendix C, for discussion of subsidence.

78-46 The citation supports the discussion on modification of subsidence prediction calculation methods as presented in Appendix C.

78-47 Noted and acknowledged. Thank you.

78-48 Noted and acknowledged. Thank you.

78-49 Noted and acknowledged. Thank you.

78-50 Noted and acknowledged. Thank you.

78-51 Noted and acknowledged. Thank you.

78-52 Noted and acknowledged. Thank you.

78-53 Comment noted. Guzzlers are proposed to mitigate impacts at 2 springs with average flows in the 0.2 to 0.4 gpm range. Guzzlers are not discussed as being equivalent to any natural source.

78-54 Noted and acknowledged. Thank you.

78-55 Noted and acknowledged. Thank you.

78-56 See text, Appendix A, Figure A-1 and Section D., Roads and Railroads, for discussion of planned roads. Permitting is not required.

78-57 Additional exploratory drilling would be based on a business decision made by Meridian and is beyond the scope of the EIS. However, additional drilling would require a prospecting permit from Montana DSL.

78-58 Subsidence should not disrupt recreation activities.

78-59 This comment is beyond the scope of the EIS.

78-60 See response to comment 76-3.

78-61 See responses to comments 73-6 and 76-3.

78-62 Noted and acknowledged. Thank you.

78-63 Meridian's deals and contracts are beyond the scope of the EIS.

78-64 Ventilator shaft construction was not identified as an issue for analysis in the EIS and is therefore beyond the scope of the EIS.

78-65 Details of the heavy media separation process were not identified as an issue for analysis in the EIS and is therefore beyond the scope of the EIS.

78-66 Future plan revisions are beyond the scope of the EIS. Only the proposed plan has been analyzed. See response to comment 25-6.

78-67 See responses to 49-2 and 70-4.

78-68 Elk herds ranging onto private land are managed largely on landowner tolerance. An increase of elk on private lands within the Bull Mountains which resulted in measurable competition with domestic livestock for forage would likely result in a decrease in the herd through an increase in permits issued.

78-69 As with other wells, horizontal drains are screened to prevent the migration of sediment into the system.

78-70 Fracture repair is one technique proposed for hydrologic mitigation. See text, Appendix A, Section F., Hydrologic Mitigation.

78-71 The precise configuration of the small areas from which livestock would be excluded as a result of mitigation efforts is beyond the scope of the EIS.

78-72 Noted and acknowledged. Thank you.

78-73 The coal would be air-dried by blowing ambient (unheated) air through it. In the primary phase of the Project, this would be done in the air classification system. A baghouse (fabric filtration) system would be used for particulate emission control. A coal-fired boiler is planned to provide space heat for buildings.

78-74 Meridian's relationships with other corporations is beyond the scope of the EIS.

78-75 Noted and acknowledged. Thank you.

78-76 See text and tables, Appendix A., Section F., Hydrologic Mitigation, for discussion of the 130 springs and seeps being monitored.

78-77 Discussion of detailed bonding requirements is beyond the scope of the EIS. See response to comment 22-6.

78-78 Noted and acknowledged. Thank you.

78-79 Noted and acknowledged. Thank you.

78-80 Noted and acknowledged. Thank you.

78-81 See text, Appendix A, Section A., Environmental Monitoring, for discussion of monitoring plans. All 130 springs would be monitored. Monitoring frequency could change as necessary.

78-82 See text, Chapter IV, Section 6., and Appendix A, Section F., Hydrologic Mitigation, for discussion of mitigation wells.

78-83 Mature ponderosa pine trees could lean or fall over, possibly resulting in tree mortality.

78-84 Noted and acknowledged. Thank you.

78-85 Predicting radon releases as a result of subsidence in the area was not identified as an issue for analysis in the EIS and is therefore beyond the scope of the EIS.

78-86 Angle or horizontal borings for the purpose of intercepting water sources is not a new technique and is not difficult to implement. Horizontal borings are presented as one potential technique for hydrologic mitigation. Extensive documentation is neither warranted nor within the scope of the EIS.

78-87 Noted and acknowledged. Thank you.

78-88 The analysis of the cost to the State of Montana to implement a proposed mitigation plan is beyond the scope of the EIS. The reclamation bond would cover the mitigation costs and these costs have been calculated and presented in the permit application. See response to comment 22-6.

78-89 Noted and acknowledged. Thank you.

78-90 Noted and acknowledged. Thank you.

78-91 Meridian must comply with all applicable Federal and State regulations including obtaining the required permits. The status of appropriate permitting is beyond the scope of the EIS.

79-1 See response to comment 6-8.

79-2 See responses to comments 6-8 and 10-1.

80-1 See text, Chapter III, Section J., Social Well-being, and Chapter IV, Section 11., impact topics f. and g. Also see response to comment 39-2.

80-2 Mental health aspects of coal hauling and operation of the Huntley loadout were not raised during the scoping procedure and have been brought up by few commentors. The Huntley loadout is only proposed for a short time; 2 years. Compliance with air quality regulations and additional permit conditions are designed to protect public health (see Chapter II, Section 1., and response 42-3).

80-3 See response to comment 80-2.

81-1 See response to comment 22-6.

81-2 Noted and acknowledged. Thank you.

83-1 See responses to comments 6-8 and 10-2.

83-2 See responses to comments 6-8 and 10-1.

83-3 See text, Appendix A, Section F., Reclamation Plan, for discussion of proposed mitigation.

83-4 See response to comment 80-2.

83-5 See response to comment 80-2.

83-8 See Chapter III, Section J., Law Enforcement and Fire Protection, for discussion on the limited fire protection in Huntley.

83-9 See response to comment 10-6.

83-10 See response to comment 38-8.

83-11 See response to comment 6-12 and 14-2. See text, Chapter IV, Section 6., and Appendix A, Section C., Other Facilities, for discussion of the existing Huntley loadout well.

83-12 See response to comment 42-1. The full Chrome Corporation of American baseline report is on file at the DHES Air Quality Bureau.

83-13 See response to comment 39-2.

83-14 Noted and acknowledged. Thank you. See responses to comments 6-8, 10-1, and 10-2.

83-15 See revised conditions, Chapter II, Section 1., and Appendix A, Section F., for discussion of conditions and mitigation.

83-16 See response to comment 80-1 and 80-2.

83-17 See text, Chapter IV, Section 1., Assumptions for Alternative 1, and Appendix B for cumulative impacts discussion.

83-18 See response to comment 6-14.

83-19 Noted and acknowledged. Thank you.

83-20 The results of the social survey were used to describe existing conditions and project potential impacts. The results of the survey are available from Montana DSL.

83-21 Mental health effects related to risk of decrease in property values is beyond the scope of MEPA.

83-22 See response to comment 38-8.

83-23 See responses to comments 6-12, 14-2, and 83-11. No other known wells exist within 1,000 feet of the loadout well at a similar depth. Potential impacts are based on aquifer material characteristics.

83-24 See responses to comments 42-1 and 83-12.

83-25 See response to comment 39-2.

ORAL TESTIMONY

H-1 See Chapter III, Section J., Social Well-being, for discussion on past use of existing Montana Rail Link low-volume coal loadout facility in Huntley in 1990.

H-2 There is no known technical model or basis that would assist in considering the movement of coal particles through the soil and into the ground water. There is no basis for considering the danger of ground water contamination by coal particles moving through the soil.

H-3 See Chapter IV, Section 9., impact topic a.

H-4 Farmers would experience road conditions and hazards similar to those discussed in the transportation sections of Chapters III and IV of the EIS.

H-5 The exact number of increased accidents cannot be quantified.

H-6 See text Chapter IV, Section 9., impact topics a. and c. See Letter 57 from Montana Department of Transportation.

H-7 The improved design of the loadout facility includes the following air pollution mitigation measures:
(1) A drive-over truck dump bin;
(2) A radial-stacking conveyor with a flexible-discharge chute;
(3) An underground (underpile) reclaim system with a conveyor to the rail cars and a flexible-discharge chute; and
(4) A water spray system for the access road and stockpile. (Waterline freezing can be avoided by heat-tracing or self-draining lines.)
This overall design minimizes the amount of coal re-handling by loaders.

H-8 The type of emission controls to be used was analyzed by Yellowstone County through the air quality permit process. Enclosure of the pile would provide a higher level of control but would be prohibitively expensive, especially given the short-term nature of the Project. This is consistent with the State and Federal application of Best Available Control Technology (BACT).

H-9 If a situation was identified that created an imminent danger to the health or safety of the public, the operation could be shut down immediately.

H-10 See response to comment 76-3.

H-11 The consideration of Meridian's markets and contracts are beyond the scope of the EIS. See response to comment 76-3 concerning the loadout.

H-12 The projected truck traffic may induce some commuters to use the interstate highway; however, there is no way to predict exactly how much traffic may be re-routed or what impact this would have on business in Billings Heights.

H-13 See response to comment 10-1.

H-14 See text, Chapter IV, Section 9., impact topic a., See Chapter IV, Section 11., impact topic g., for discussion of impacts from the operation of the proposed loadout in Huntley.

H-15 See response to comment 13-2.

H-16 The comment is correct. See Letter 12, and Chapter IV, Section 11., impact topic b., for a discussion of costs and revenues that would accrue to Musselshell County as a result of the proposed Project.

H-17 Noted and acknowledged. Thank you.

H-18 Noted and acknowledged. Thank you.

H-19 See response to comment 7-9 regarding the cost of the crosswalk. The condition of Highway 312 is acknowledged in Chapter III, throughout Section H.

H-20 Noted and acknowledged. Thank you.

H-21 There are coal tax funds available for highway impacts.

H-22 See revised text, Chapter II, Section 1., revised conditions. See response to comment 76-3 concerning the loadout.

H-23 There are 45 jobs projected for coal transport operations for years 1 and 2. Calculations noted.

H-24 This comment is beyond the scope of the EIS. This is a business decision to be made by Meridian.

H-25 See responses to comments 6-8 and 10-1.

H-26 See Table II-1 for a cost comparison of constructing the loadout.

H-27 See responses to comments 6-8 and 10-1.

H-28 Most of this statement is true, however, fuel taxes are never put into the general fund.

H-29 See Letter 47 from Montana Department of Transportation.

H-30 See response to comment 38-8.

H-31 The amount of coal mined per year would be a business decision on the part of Meridian and is considered beyond the scope of the EIS. See response to comment 76-3 concerning the loadout.

H-32 Wildlife in the Huntley loadout area was not addressed because a beet-loading facility would already be classified as an industrial/commercial site and as such have little wildlife habitat. Those species associated with this type habitat (e.g., rock doves[domestic pigeons], starlings, English sparrows) would probably be little affected by increased industrial activity.

H-33 Considering the origination point of applicants for jobs in the proposed mine is beyond the scope of the EIS.

H-34 Noted and acknowledged. Thank you.

H-35 Noted and amended. Thank you.

H-36 Noted and amended. Thank you.

H-37 See response to comment 42-1.

H-38 The preliminary air quality permit determination issued by the Yellowstone County Air Pollution Control District stipulates 3 particulate air monitoring sites and a meteorological site around the facility. Operation of the network is the responsibility of Meridian, but there are numerous quality assurance procedures implemented by the County and State to assess the adequacy and quality of the data.

H-39 Noted and acknowledged. Thank you.

H-40 The maximum number of trucks added to the roadways would be 4 trucks per hour or a total of 192 trucks per day.

H-41 See Chapter IV, Section 9., impact topic a., regarding interaction of coal- and beet-hauling traffic.

H-42 See Appendix A, Section C., The Huntley Loadout, for discussion of dust control at the proposed loadout at Huntley. See response to comment 76-3 concerning the loadout.

H-43 See responses to comments 38-8 and 80-2.

H-44 Assuming that the church is 1,000 feet from the coal dump, air quality impacts should be less than the maximum impacts predicted by the dispersion modeling. The modeling receptor points were at closer distances and particulate levels were predicted to be well below applicable air quality standards. Noise impacts in the Huntley area are discussed in Chapter IV, Section 10., impact topic c. See also Chapter II, Section 1., new conditions.

H-45 Noted and acknowledged. Thank you. See response to comment 38-8.

H-46 See response to comment 10-1.

H-47 See response to comment H-32.

H-48 See response to comment H-40.

H-49 The quoted statistics relate to Highway 87 and not Highway 312. Accidents occurring along Highway 312 are generally less severe than those on other roads in the State.

H-50 See responses to comments 38-8 and 80-2.

H-51 See response to comment 80-2.

H-52 See responses to comments 38-8 and 80-2.

H-53 See response to comment 6-11.

H-54 See response to comment 38-8.

H-55 See response to comment 38-8.

H-56 See response to comment 38-8.

H-57 See response to comment 38-8.

H-58 See response to comment 38-8. See revised text, Chapter II, Section 1., Condition 6.

H-59 Noted and acknowledged. Thank you.

H-60 Noted and acknowledged. Thank you.

H-61 Noted and acknowledged. Thank you.

H-62 This has been acknowledged in the text, however, placement of stop signs is the responsibility of the Montana Department of Transportation.

H-63 This has been acknowledged in the text, however, placement of traffic lights is the responsibility of the Montana Department of Transportation.

H-64 Noted and acknowledged. Thank you.

H-65 The period during which public comment on the draft EIS and ended on October 5, 1992. The address to which substantive comments were to be mailed during that period was presented in the cover letter for the draft EIS.

H-66 Noted and acknowledged. See Letter 57.

H-67 There will be road maintenance and possible improvements based on the maintenance schedule and funding priorities of the Montana Department of Transportation.

H-68 See response to comment 83-8.

H-69 The employment figures for transportation were supplied by Meridian.

H-70 It is recognized in the text that traffic flow and public safety would be impacted on the local road system as a result of mine-related traffic. See Chapter IV, Section 9., impact topic a.

H-71 Noted and acknowledged. See response to comment H-70.

H-72 See response to comment 80-2.

H-73 See response to comment 80-2.

B-1 Meridian must comply with all applicable Federal and State regulations including obtaining required permits. Upon the expiration of a permit, application must be made to the appropriate agency for extensions or new permits.

B-2 In the permit application, Meridian proposes to use the loadout for 24 months. One of the conditions in the Department's preferred alternative is that the loadout be used for no more than 24 consecutive months from the time coal is first deposited at the site. See revised text Chapter II, Section B. The additional 12 months (total 36 months) allows for start-up construction and reclamation. See Appendix A, sections A., C., and E., for discussions of the Huntley loadout.

B-3 The schedule for hauling coal to the Huntley loadout would be based on a business decision made by Meridian and is beyond the scope of the EIS. Also see response to comment B-2.

B-4 See Appendix A, Section C., The Huntley Loadout, for discussion of dust control at the Huntley loadout.

B-5 See response to comment 22-6.

B-6 See response to comment 22-5.

B-7 See response to comment 53-1.

B-8 Generally, mitigation wells would be the final step or phase in mitigating an impacted water source. Mitigation wells would not be sited or installed until monitoring indicated the need and other mitigation alternatives were not appropriate or failed.

B-9 See response to comment 78-34.

B-10 See response to comment 22-1.

B-11 See response to comment 22-1.

B-12 See response to comment 10-1.

B-13 Guzzler systems are designed with the primary goal of serving wildlife. See Appendix A, Section F., Hydrologic Mitigation.

B-14 Although guzzlers are more commonly used as a water supply for game birds inhabiting arid areas in the southwest, the larger ones described in the draft EIS were to collect water which would then be released to smaller tanks for use primarily by domestic livestock. These larger storage tanks would have a 10,000 to 20,000 gallon capacity, not 216 gallons as indicated in the testimony.

B-15 See Appendix A, Section E., Hydrologic Mitigation, for discussion of guzzlers. Guzzlers are proposed to mitigate impacts at 2 springs with average flows in the 0.2 to 0.4 gpm range. Guzzlers are not discussed as being equivalent to any natural water source.

B-16 See response to comment 10-1.

B-17 See response to comment 9-1.

B-18 The text recognized that activities connected with the sugar beet stockpile are seasonal, occurring for a maximum of 4 months. See Appendix B, Section 4. for a discussion of the sugar beet loading site.

B-19 According to Meridian's development schedule, construction, 24 months of loadout, use, and loadout reclamation would take a maximum of 3 years. The remainder of the comment is noted.

R-1 There are no improvements proposed as part of this Project. Musselshell County maintains Old Divide Road, therefore any questions should be directed to the County. See Letter 12.

R-2 See response to comment 22-6.

R-3 The suggested mitigation would screen the waste disposal area but would not alter the loss of the visual resource.

R-4 See response to comment 25-6.

R-5 Noted and amended. Thank you.

R-6 Noted and amended. Thank you.

R-7 Noted and acknowledged. Thank you.

R-8 Noted and acknowledged. Thank you.

R-9 As stated in the text, the proposed and approved method of road dust control would be watering. The State Air Quality Bureau's position is that an adequate level of road dust control can be maintained if the watering frequency is proper on an as-necessary basis. A specific watering frequency is not stipulated because of the variability in weather conditions. The adequacy of dust control would be evaluated primarily through visual observation by Montana DSL and Air Quality Bureau personnel and, to some extent, by air monitoring. If problems were identified, further mitigation could be required such as chemical stabilization or road surfacing. The agencies would be as responsive as possible to local residents' concerns and would appreciate their evaluation of dust control adequacy on an on-going basis if the Project was developed. See Chapter II, Section 1., new condition 5.

R-10 See response to comment R-9.

R-11 The water supply system in Roundup is underutilized and adequate for the existing population. See Chapter III, Section J., Public Water Supply, Wastewater Treatment, and Solid Waste.

R-12 The loss is not really "lost revenues", but lost opportunity or foregone revenues.

R-13 See response to comment 9-1.

R-14 By law, any permit issued is a 5-year permit that is not automatically renewable.

R-15 See responses to comments 6-8 and 10-1.

R-16 Please refer to Letter 57, Montana Department of Transportation's review of the draft EIS. Please note that the Department's review of the draft EIS found issues properly addressed.

R-17 Highway 12 is only associated with loadout sites that were eliminated from further discussion. Alternative hauling routes were not identified as an issue during scoping for the EIS. See Letter 57 for further discussion of transportation mitigations.

R-18 Refer to Letter 57.

R-19 Noted and acknowledged. Thank you. See Chapter III, Section J., Human Services and Health Care Facilities, for discussion of increase in caseloads over the past couple years.

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